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China Report

AGRICULTURE

No. 91



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PROBLEM OF FUNDS FOR AGRICULTURAL MODERNIZATION DISCUSSED

HK200625 Beijing JINGJI YANJIU in Chinese No 4, 20 Apr 80 pp 69-72

[Article by Tan Keliang [6009 0344 5328] and Tao Yuerui [7118 6460 6904] of Hebei Agricultural University: "Investigative Report on the Problem of Funds for Agricultural Modernization in Luancheng County"]

[Text] Luancheng County in Hebei Province is one of China's agricultural bases in which overall scientific experiments are carried out for the modernization of agriculture. We made some investigations into the problem of funds for agricultural modernization in this county. Herewith, the general situation and our preliminary suggestions for the solution of the problem.

I

To modernize agriculture, we must provide it with advanced agrosience, technology and machinery and carry on an all-round technological transformation so as to transform the agriculture which is based on manual operations into a big production of socialist modernization and increase agricultural productivity by a wide margin.

The problem of agricultural modernization is, in fact, a problem of developing the agricultural productive forces. To this end, we must, first of all, change the means of labor in agriculture and improve the conditions of agricultural production. Therefore, we must renew and transform the fixed assets of agriculture and raise the investment of fixed funds.

Second, we must change the subject of labor in agriculture. For instance, by introducing better strains of seed, expenditure on the means of production relating to commodities will be increased and consequently circulation funds caused to go up.

Meanwhile, along with the realization of agricultural modernization, we need to train a large number of agrotechnicians and constantly raise the scientific and cultural level of the peasants so that the labor force in the rural areas can be adapted to the needs of agricultural modernization.

In the course of agricultural modernization, the income of peasants needs to be improved continually. The increase of payment for labor in agriculture will inevitably affect the growth of agricultural accumulation. In addition, various departments which are related to agriculture such as those of agricultural machinery, rural communications and transportation, commerce, culture and education as well as public health must be developed correspondingly. All this requires the state financial allocation and an increase in state investment.

Thus it can be seen that the realization of agricultural modernization needs a large amount of funds. It is impossible to accomplish agricultural modernization without investing a huge amount of funds.

II

As far as the agricultural production units are concerned, the funds for agricultural modernization are mainly composed of two parts, namely fixed funds and circulation funds. The fixed funds required for agricultural modernization are chiefly for investment in mechanization and electrification of agriculture as well as in bringing all farm land under irrigation; the circulation funds are mainly for expenditures on extensive use of chemical fertilizers or other farm chemicals, the use of improved strains of seed and expenditures on raw materials such as petroleum and electric power. During our investigation in Luancheng County, special emphasis was given to investigating the investments made from 1975 to 1978 in the mechanization of agriculture, chemical fertilizers, farm chemicals, petroleum and electric power as well as the source of funds. The situation is as follows:

Investment in Mechanization of Agriculture and Source of Funds

By 1978 the total investment made by Luancheng County in the mechanization of agriculture was as much as 19.66 million yuan or equal to 415,000 yuan per mu according to the calculation of the cultivated area. From 1975 to 1978 the amount of annual investment was around 3 million yuan. All these funds were mainly used for purchasing big or medium-sized farm implements increased from 25.7 percent in 1975 to 35.1 percent in 1978. As irrigation and drainage equipment had met the needs in the main, there was little increase of investment.

According to the analysis of different types of production units, the source of funds for mechanization of agriculture was as follows: Of the total investment in the mechanization of agriculture in Luancheng County in 1978, the production teams accounted for 60.8 percent; the production brigades, 29.5 percent; the commune, 8.1 percent and the state-run farming machinery station and the state farm or grazing land amounted to 1.5 percent. This is because the proportion of irrigation and drainage equipment is quite considerable and generally speaking, the investment is made by the production team, there the production team constitutes of agriculture. As irrigation

and drainage equipment was scarcely purchased in these years and the new farm implements whether big or medium-sized were purchased and managed by the production brigades, so the proportion of investment made by the production brigades ranked second compared with the production teams and signs pointed toward a further increase. Due to the difficulty of collecting funds, the development of commune-run farming machinery stations was restricted. In the case of total investment in mechanization of agriculture, the proportion of commune-run farming machinery stations is not only smaller than that of production brigades and production teams but what is more, there is a tendency toward decline.

The source of funds for the mechanization of agriculture varied in different kinds of agricultural production units. The state-run farming machinery station and the state farm or grazing land mainly relied on the state financial allocation. Under the circumstances that no special funds were allocated from the state financial organs, the state-run farming machinery station collected most of the funds by taking back the money which was transferred to a lower level for purchasing machinery and tools in 1969. As far as the commune-run farming machinery stations were concerned, the funds were collected by relying on the accumulation of the commune-run enterprises and farming machinery stations. According to our investigations in Quema, Loudi, Xiaomei, Majiazhuang and Chencun--five communes in the county--of the total investment for mechanization of agriculture in the commune-run farming machinery stations, the accumulation of commune-run enterprises accounted for about 25.7 percent, that of farming machinery stations about 39.6 percent, state aid about 4 percent and the remaining percentage was apportioned among the production teams and collected from loans as well as funds of farming machinery and tools which had been transferred to a lower level. As for the production brigades, their source of funds for the mechanization of agriculture was mainly based on the brigades' own investment and apportioned among the production teams. According to our investigation in the seven brigades, namely Chaifu, Qianbiaozhong, Lungmen, Nanquema, Dongyangshi, Loudi and Yongan, of the total investment for agricultural mechanization in the seven brigades, 65 percent depended on the income of brigade-run enterprises, about 26 percent was apportioned among production teams and the rest relied on state assistance and the commune members' investment. In the case of the production teams, their source of funds for agricultural mechanization was mainly collected from the accumulation of funds which were retained during the end of year distribution.

After surveying the situation in Luancheng County, we can sum up four channels with regard to the source of funds for agricultural mechanization. The results of preliminary calculations are as follows: the amount of state direct investment or assistance to communes and brigades was 1.114 million yuan, accounting for 5.7 percent of the total investment of agricultural mechanization in the county; the investment by commune level (including the accumulation of commune-run enterprises and the funds owned

by commune-run farming machinery stations) was 1.04 million yuan, making up 3.3 percent of the total investment; as for the brigade level, the amount reached 3,787 million yuan, accounting for 19.3 percent; the investment by production team level (including the investment for agricultural mechanization in communes and production brigades) was as much as 13,716 million yuan, amounting to 69.7 percent.

Thus, it can be seen clearly that at present, the source of funds for agricultural mechanization depends mainly upon the investment made by the production teams. Though the production brigades play a considerable part and rank second in the total investment, the brigade-run enterprises have transferred labor force from production teams without payment and the income of brigade-run enterprises is not apportioned among production teams. Therefore, the funds which are transferred on gratis from production teams cover a considerable part of the brigade's investment.

Some Production Cost and Source of Funds for Agricultural Modernization

Chemical fertilizer and insecticides have been utilized in Luancheng County since the movement for agricultural cooperation. According to the calculation of sales volume, 33,097 tons of chemical fertilizer and 2,429 tons of insecticides were used all over the county in 1978. An average of 140 jin of chemical fertilizer including 54 jin of nitrogenous fertilizer was applied to each mu of farmland; the use of insecticides reached a fairly high level with 10.3 jin applied to each mu. In 1978 the county made an investment of about 7.45 million yuan in chemical fertilizer and 1.45 million yuan in insecticides. All the funds needed were borne by production teams.

The consumption of fuel and electric power for mechanization of agriculture led to an increase of expenditures for petroleum and electricity. In 1977 the sales volume of petroleum (including diesel oil and gasoline) in the county was 73.69 million tons with an average of 15.6 kgs of consumption in each mu of farmland. In 1978 the total sales of petroleum reached 1.2 million yuan. As this part of investment was mainly for irrigation and drainage equipment, the majority of the funds was supported by the production teams. In 1978 power consumption for the rural irrigation and drainage in the county amounted to 32.07 million kwh with an average of 68 kwh for each mu of farmland. The production team pays about 102-192 million yuan for electricity every year.

Let us look at the four items of expenditures mentioned above: apart from a little volume of petroleum used for tractors and cars of the communes and brigades, all the expenses were borne by the production teams. The circulation funds with which the production team paid for these expenditures should have been solved by drawing on a prearranged production cost which was reserved in the distribution of previous years. However, the amount which was retained was very little. Luancheng County held only a quarter of the total amount of four items of expenditures. In addition, many production teams were beset with overspending and debts. Therefore, the

shortage of circulation funds is made up every year by mainly relying on credits as well as earnest-money for purchasing grain and cotton. Having compared expenses of the four articles--chemical fertilizer, insecticides, petroleum and electricity--which the county bore from 1976 to 1978, with the prearranged production cost, credit and earnest-money for purchasing grain and cotton, we found that the production cost which was prearranged in the previous year accounted merely for 23.8-34.3 percent of the total expenses of the four articles; earnest-money for grain and cotton 18.5-21 percent while credit amounted to 60-70.8 percent. Obviously, credit has become an important source of circulation funds for the production teams.

Viewing from the situation and sources of both types of funds mentioned above, we can find that at present, the source of funds for agricultural modernization mainly lies in accumulation of the economy at production team level. As a result, the burden of production teams are quite heavy. Since the accumulation of the economy of both commune and brigade level is very limited, their investment proportions are not big. The state assistance is even less. Credit issued by the bank or credit cooperative can only solve the needs for circulation funds at present.

For the time being, the production teams cannot get rid of the state of manual operations and the productivity is still very low. In addition, the price of agricultural products is low whereas the costs are high. Thus, the growth of accumulation is restricted. At the same time, the price of industrial products needed in the countryside is expensive and the quality inferior. In consequence, the problem of funds for agricultural modernization is even more striking. To accelerate the pace of agricultural modernization, we must try by all means to solve the problem of funds.

The solution to the problem of funds for agricultural modernization mainly lies in the solution for the fixed funds which are needed for purchasing fixed assets and carrying on capital construction on farmland. This is because the requirements of funds are enormous and the turnover is sluggish. Though huge sums in circulating funds may lie idle, the turnover is fast. By strengthening economic management and economic accounting and paying attention to the economic results of the investment, we can easily find a solution for the problem of circulating funds.

III

Through the investigation in Luancheng County, we hold that the problem of funds for agricultural modernization should be solved by the following four aspects.

Collective Accumulation of the Basic Accounting Unit in the Rural People's Communes

The overwhelming majority of China's agricultural production is run by the collective economy of the rural people's communes. At present, the

production team is generally taken as the basic accounting unit in the rural people's communes. The production team directly organizes production, collectively owns the land and other means of production as well as collectively distributes its yields. Therefore, the funds needed for the realization of agricultural modernization should be collected by the production team.

From 1975 to 1978 all the production teams in Luancheng County retained annual accumulation funds as much as 2.59--4.29 million yuan, (as printed) accounting for 4.5--7 percent of the total income for distribution. Accumulation funds are the sources of funds which the production team uses to enlarge its reproduction. According to investigation, the total value in 1977 of the fixed assets of the economy of the production level in the whole county reached 40.63 million yuan while the amount of accumulation funds which were put aside was 3.15 million yuan, accounting for 8 percent of the total value of fixed assets. At present, under the circumstances that no depreciation charge for fixed assets is taken by the production team, the accumulation funds retained every year correspond to the depreciation charge for fixed assets which should have been drawn. That is to say, the production team can only manage to maintain a simple reproduction and has no funds to enlarge the reproduction.

As the price of agricultural products is low and the costs high, the income level of commune members fails to be raised. The average income of all the commune members in Luancheng County reached 83 yuan in 1971 and yet it was only 80 yuan in 1977. Since the purchase prices of farm products were raised, the average income of the commune members has increased considerably but accumulation cannot be expanded by a wide margin.

Nowadays, the production team is generally small in scale. Therefore, we hold that in the course of agricultural modernization, the production team can only manage to solve the circulating funds and a part of fixed funds such as funds for purchasing chemical fertilizer, insecticides and improved seeds, buying up-to-date farming machinery and tools which are used within the scope of the production team (such as irrigation and drainage equipment, threshing machines, small tractors, accessory farm implements, and transport and small water conservancy means). However, the production team needs financial support from the bank or credit cooperative.

Collective Accumulation of the Commune or Brigade-run Enterprises in the Rural People's Communes

Accumulation of the commune or brigade-run enterprises (including commune-run industry and diversified economy) is the important source of funds for agricultural modernization. This is mainly because:

1. The commune or brigade-run enterprises which produce high-value products with low cost and high rates of profits can manage to earn much more

profits than in farming. Viewed from the development of commune or brigade-run enterprises in Luancheng County, the total output of commune or brigade-run enterprises in the county increased from 11.6 million yuan in 1975 to 19.86 million yuan in 1978, accounting for one-third of the total agricultural output (59.41 million yuan). In 1977 the annual profits reached the highest record of 7.66 million yuan, accounting for 38.2 percent of the output of commune or brigade-run enterprises of that year. Compared with the accumulation funds drawn by the production team each year, the profits earned by the commune were more than twice as much as the accumulation funds and the number of labor force employed by the commune or brigade-run enterprises was merely 10,000 people, amounting for one-tenth of the total number of laborers in the county.

2. Most of commune and production brigade enterprises are concentrated on both the commune and production brigade levels whereas the production teams generally run fragmentary sideline occupations. From now on, priority must be given to the commune and brigade levels with regard to investment for agricultural modernization, such as investment in large farm machinery, sprinkling irrigation equipment and water conservancy construction within the scope of the commune or production brigade. Therefore, development of commune and production brigade enterprises and solutions to the problem of funds for agricultural modernization are beneficial to consolidating the collective economy of people's commune and reducing burdens of production teams.

In the distribution of profits of commune and production brigade enterprises, the problem that exists at present is that the commune and production brigade enterprises themselves need further expansion and investment. All this is in great contradiction with supporting agriculture. Take the profits of commune and production brigade enterprises in Luancheng County in 1978 for example. Some 15.5 percent was used for agricultural mechanization and 59 percent for enlarging re-production of commune and production brigade enterprises. In addition, in the course of agricultural modernization, commune and production brigade enterprises must make arrangements to accommodate the surplus labor force. Therefore, they should speed up the rate of development and put in more investment. In 1979 Luancheng County demanded that the commune and production brigade enterprises double their output. According to the investment level in 1978, the amount of investment would also be doubled, with about 10 million yuan of funds needed. In so doing, the commune and production brigade enterprises failed to solve the investment funds for enlarging their own reproduction, to say nothing of providing more funds for supporting agricultural modernization.

We hold that acceleration of the development of commune and production brigade enterprises will not only enable the commune and production brigade enterprises to make arrangements to accommodate the surplus labor force in the countryside but accumulate more funds for agricultural modernization.

Increase Agricultural Loans

Agricultural loans can be served as an important channel for settling the problem of funds for agricultural modernization. The realization of agricultural modernization will make the organic structure of agriculture exceed that of industry, and the amount of funds used for agricultural production will be increased. As the period of agricultural production is long, the turnover of funds is sluggish. According to the experience of many countries in the world, agricultural loans are indispensable not only in the course of agricultural modernization but also after its realization.

The credit funds needed for agricultural modernization are composed of long-term credit used for solving the needs of fixed funds and short-term credit for solving the shortage of circulating funds. The credit granted in Luancheng County at present is mainly credit for production expenditures and equipment. From 1975 to 1978 the year-end balance between these two credits granted in the county was around 2.48 to 4.66 million yuan. In 1978 credit for production expenditures accounted for 65.2 percent and credit for equipment comprised 34.8 percent. The long-term credit was not only small in proportion but on the implementation of the credit plan, it was not taken as long-term credit. So long as there was the capability to refund the credit, it should be paid back the same year. It was not until 1978 that the bank began to issue 450,000 yuan of long-term interest-free loans.

As far as the situation in Luancheng County is concerned, there is no serious problem whatsoever about the short-term credit. However, the main problem lies in finding a solution for the long-term credit which is needed in the course of agricultural modernization.

How will the source of credit funds be solved? At present, all this depends on credit targets set by the bank of the higher level. We believe that apart from increasing the above-mentioned credit target, the bank and credit cooperative in the county must be empowered to engage in credit business, absorb a huge amount of idle funds in the countryside and extend credit. According to our investigation in Luancheng County, the bank deposits of commune members in the county increased from 1.45 million yuan in 1975 to 3.33 million yuan in 1978, reaching the highest recorded level in history. We made a comparison between the 1975-1978 bank deposits in the county (including the commune members' personal bank savings and the collective savings of the production teams) and the credit. The highest proportion of credit accounted for 73.6 percent of bank savings and the lowest amounted to 31.1 percent. All this fully indicates that there are bright prospects for absorbing idle funds in the countryside in order to increase the source of credit funds.

The State's Financial Aids

In the past, our funds for industrialization mainly relied on agriculture. When we have laid a certain foundation on industry and begin to accomplish agricultural modernization, industry should give support to agriculture instead of being supported by it. First, this is because large funds are needed for the realization of agricultural modernization: according to the initial plan of Luancheng County, over 60 million yuan of investment funds are required whereas the accumulation funds and profits earned by the commune and brigade enterprises, which are drawn by the county every year are merely 10 million yuan. Even if we use all the funds for agricultural modernization, it will take six years before they can manage to meet the needs for modernization of agriculture. It is necessary for the state to provide abundant financial assistance to accelerate the modernization of agriculture.

Second, a considerable part of investment for modernization of agriculture should be made by the state, such as investments in large water conservancy projects, construction of a power network, an industry which directly serves agriculture, communications and transportation as well as seeds, fodder and farm machinery service corporations which serve agriculture. Financial resources of Luancheng County are very limited. In 1977 financial revenue of the county was merely 5.34 million yuan, including 1.05 million yuan of agricultural tax revenue. Even if all the financial revenues were set aside, the county would still find the funds inadequate to meet the needs.

The funds which the state finance gives support to agriculture mainly are "the investment for supporting the people's commune." Viewed from the situation in Luancheng County, the amount of state assistance in 1976 was only 190,000 yuan but in 1978, it reached 598,000 yuan, 3 times as much as that in 1976 and corresponded to 50 percent of the annual agricultural tax. However, as compared with the investment for modernization of agriculture, the proportion was very small. In 1978 the investment funds which the state provided for supporting accessory farm implements in Luancheng County were 174,000 yuan, accounting for 5.7 percent of 3.05 million yuan, the amount of investment for mechanization of agriculture in that very year. In the future, more investment for modernization of agriculture and more state assistance are needed.

As for the way in which the state gives support to the modernization of agriculture, we hold that the state-run farm machinery stations should be extended and large farm machinery concentrated in the state-run farm machinery stations so as to increase utilization rates of machinery and implements and lighten the burden of commune and production brigades; the state must continue to give a 50-percent subsidy to the communes and production brigades for purchasing farm implements. Such a measure should be extended to the purchase of tractors; the investment funds for construction of water conservancy works and electric power which are

beyond the bounds of the commune should be borne by the state and all possible efforts should be made to lighten the burden of the collective; the state must also give support to the modernization of animal husbandry, or it will be difficult to develop; and the state must provide a certain amount of funds for promoting the development of commune and production brigade enterprises and this will be beneficial to solving the problem of funds for agricultural modernization.

CSO: 4007

PROCESSING OF AGRICULTURAL, SIDELINE PRODUCTS DISCUSSED

16K200600 Beijing JINGJI YANJIU in Chinese No 4, 20 Apr 80 pp 22-25

[Article by Shen Liren [3055 4539 0086], bureau of county and commune industry, Jiangsu Province: "On the Processing of Agricultural and Sideline Products by Commune and Production Brigade Enterprises"]

[Text] The decision on some questions concerning the acceleration of agricultural development approved by the 4th plenary session of the 11th CCP Central Committee pointed out: "In accordance with the principle of being rational and economical, those agricultural and sideline products which used to be processed in the countryside should be gradually transferred to commune and production brigade enterprises." Such a transfer is a matter of major economic policy. It involves many aspects such as agriculture, industry, commerce, production, supply and marketing of industries as well as the layout of industry in cities and towns. There are a lot of problems which need earnest study and correct handling.

I

For a long time, it has seemed to be a common practice that industry is run in the cities, agriculture in the countryside and most of the processing of farm and sideline products in the cities, and that the countryside can do nothing but supply the cities with industrial raw materials. However, the above cases are not all rational and unchanging.

"The agricultural product, before going into consumption (personal or productive), undergoes technical processing." (Lenin: "The Development of Capitalism in Russia," Collected Works, Vol 3, p 287) This is the continuation and extension of agricultural production which originally combined closely with agricultural production. Marx says, "Originally agricultural and industrial labor were not separated; the latter was an adjunct of the former. ...Weaving, spinning, and so forth were first carried on as an agrarian sideline." (Karl Marx: "Kapital" Vol. III, Chapter 37 p 617) This is a self-sufficient natural economy. But later on, with the development of production, especially that of production of commodities, there emerged a division of agriculture and industry. The processing of agricultural and sideline products dissociated and became an independent sector.

The separation of the processing of agricultural and sideline products from agriculture went through a considerably long process. It took shape gradually with the development of capitalist production in the main. In the very beginning, the peasants took agricultural and sideline products as raw materials and processed them into means of livelihood for their own consumption's sake. Afterward, this kind of processing separated from agriculture: rural sideline occupations were reduced to extinction and the peasants had to separate themselves from their own means of livelihood. Thus, as raw materials, agricultural and sideline products became an essential factor of constant capital in the process of production, the processed means of livelihood became commodities and an essential factor of inconstant capital. At the same time, polarization among peasants began to appear. The majority who grew poorer with each passing day turned out to be proletarian who sold their labor as commodities. In "The Development of Capitalism in Russia," Lenin explained in detail the process of capitalist development of all trades and professions among which were wine-making, beetroot cane, potato starch-making, oil pressing, tobacco industries and those belonging to the technical processing of agricultural and sideline products; weaving, carpet and hat-making, tannery, fur industries and so on fall into the category of workshop handicraft industry; textile and food industries, timber and livestock products processing were parts of major industry. The emergence of these trades and professions formed the process of capitalist industrial production, that is, the process of the separation of agricultural and sideline products from agriculture. The separation became the key to the separation of agriculture from industry and the countryside from the cities and promoted the development of productive forces. Historically, it was a great progress. But since this separation came hand in hand with the development of capitalism, it brought along all evils inherent in capitalism. Engels said, "The very first great division of labor, the separation of town and country, condemned the rural population to thousands of years of mental torpor and the townspeople each to subjection to his own individual trade." (Frederick Engels: "Anti-Duhring," Selected Works of Marx and Engels, Vol 3, p 330) In "Manifesto of the Communist Party," Marx and Engels pointed out, "...industries that no longer work up indigeneous raw material but raw material drawn from the remotest zones" have raised such a militant watchword: "Combination of agriculture with manufacturing industries, gradual abolition of the distinction between town and country." (Karl Marx and Frederick Engels: "Manifesto of the Communist Party," p 37) To transfer agricultural and sideline product processing to the countryside and make it combine again with agriculture is an indispensable part of the integration between industry and agriculture as well as between town and country. Of course, this is definitely not a simple restoration, much less a retrogression but a new and higher-grade union, namely "A union of agriculture and industry on the basis of separate development." This is the sacred mission entrusted by our time to the proletariat.

In our history, so was the relation and evolution of agricultural and sideline product processing and agriculture in general. Under the condition of a self-sufficient economy, the so-called "men engaging in farming and women in weaving" was the expression of combining agriculture and

sideline occupations. Along with the development of capitalist production, agricultural and sideline products turned to be raw material of commodities and transferred to the cities for processing. Thus the original combination was sabotaged and rural sideline occupations greatly harmed. As a result, the situation appeared where peasants were impoverished and the countryside fell behind the cities. During the initial post-liberation period, the indigenous textile industry and other handicrafts in the areas south of the Changjiang were such historical remains. Later on, with the change of policies, the agricultural and sideline products were gradually concentrated on and processed in the cities and handicrafts were industrialized. This was progress. But on the other hand, it turned the rural economy into a single-product one, and sideline production of peasants nearly came to a standstill. As industrial raw materials, the agricultural and sideline products were taken away from the countryside. Consequently, the rural economy and sideline production were in a wretched plight. In now studying the processing of agricultural and sideline products by commune and production brigade enterprises, it is enlightening to look back at the above-mentioned background.

II

The processing of agricultural and sideline products by commune and production brigade enterprises has many advantages.

As far as the countryside is concerned, the processing can manage to support the communes and production brigades to run enterprises, realize the combination of agriculture, sideline occupations and industry, and develop comprehensively. It is favorable to developing the collective economy of people's communes, providing funds and material for agriculture and promoting the modernization of agriculture; it is beneficial to increasing the income of commune members and raising the living standard of the peasants and changing the backwardness in the rural areas. In developing commune and production brigade enterprises, there are many ways to follow. However, the development should be, first of all, based on existing local resources among which agricultural and sideline products are the most staple ones, such as grain, industrial crops, products of forestry, animal husbandry and fishery and other wild resources. Most of these products can be utilized as materials for processing. These abundant raw materials are the material foundation for developing commune and production brigade enterprises. With the development of agricultural production, these raw materials will continue to increase, thus developing the commune and production brigade enterprises in a steady and continued way. This is the common practice that we insure processing with planting and breeding, promote planting and breeding with processing and develop resources through utilizing them.

So far as the cities were concerned, the processing of agricultural and sideline products by commune and production brigade enterprises can re-structure the industry in the cities, take the path to industrialization

in which industry and agriculture, town and country are integrated so as to concentrate energy on developing sophisticated and advanced products. Raw materials taken from agricultural and sideline products occupy a considerable proportion in the whole industry, especially the light industry. For instance, production of foodstuffs, fabrics and other daily necessities such as sugar, cigarettes, wine, pork, chickens, fish, fruits, cotton, linen, wool, silk, leather and paper should be enlarged continuously to meet the growing needs of the people's livelihood. If the processing of agricultural and sideline products is still run in the cities, it will ask the state for more workers, commodity grain and more investment funds. All these are bound to lead to a series of contradictions. On the contrary, if it is run in the countryside, under the condition that it can make use of slack seasons in farming and the surplus labor force, absorb rural funds and develop the processing of agricultural and sideline products, avoid those contradictions and enable the cities to run more big industries and service undertakings suited to be run in the cities. All this is favorable to raising the level of the industrial production as a whole.

It can also effectively narrow the "price scissors" of price parities between industrial and agricultural products and bring into play the enthusiasm of commune and production brigades for promoting diversified economy. One of the manifestations of "price scissors" is that as raw materials, the price of agricultural and sideline products is considerably low and yet the price of the industrial products after processing is comparatively high. For instance, the communes and production brigades make little profits by growing beetroot and producing silk, however, they will make big profits by processing beetroots and milk into sugar or candies and dairy products. If this processing is transferred in a proper way to the communes and production brigades and all the profits turned over to them, then the peasants' income will be increased. In fact, it narrows the "price scissors." It can manage to urge the communes and production brigades to strive to guarantee the growing areas, increase the number of livestock and raise the output per unit. As a result, light industry that takes agricultural and sideline products as raw materials has a reliable material base. Thus, light industry will further be developed.

Besides, it can raise the comprehensive utilization rate of raw materials, bring about the rationalization of production and increase public wealth. Referring to agricultural products processing, Lenin pointed out, "The waste products of the processing are frequently utilized in agriculture, thus increasing its effectiveness and restoring, at least in some measure, the equilibrium, the interdependence, between agriculture and industry, the disturbance of which constitutes of the most profound contradictions of capitalism." (Lenin: "The Development of Capitalism in Russia," Collected Works, Vol 3, p 288) For example, the processed leftover bits and pieces of livestock products, such as skin, fur and bones are very fine fertilizers. The leftover bits and pieces of wine-making materials are very fine fodders. If the processing industries are run in the cities, they will not be fully utilized. What is more, they will cause environmental pollution and arouse

indignation among the masses; transferring the processing to the countryside can turn waste into wealth and promote agricultural and sideline production. By so doing, is it not "killing two birds with one stone?"

The processing of agricultural and sideline products by commune and production brigade enterprises can also readjust the layout of industry, make production close to the raw material and consumer areas, save on social labor, reduce transportation expenses and other additional expenses of various links in the production of semifinished products, manufactured goods and raw material processing. The processing of agricultural and sideline products in the cities just goes against this principle in most cases and makes a waste of public wealth. For example, the integration of sugar processing and paper-making industries can avoid the cost of manpower, material resources and town-country-bound transportation. If the fresh and live products including domestic animals, marine products and fruits are not processed on the spot, they will suffer from even heavier losses and some will go bad for nothing. It is imperative to solve this problem so as to make a proper arrangement and let the agricultural and sideline production adapt to the outstanding feature of the agricultural and sideline production. Furthermore, quite a lot of the agricultural and sideline products processing possess a strong seasonal character. If the processing is run in the countryside, they can utilize a huge labor force in the slack season and lower the cost of the processed commodities.

Besides, it is beneficial to the implementation of the policy of "building small cities and towns" so as to prevent the emergence of industries getting more and more concentrated, cities more and more expanded while the housing, public utilities and consumer supply become more strained, from a long-term point of view, it can also eliminate the distinctions between industry and agriculture and town and country, and consolidate the worker-peasant alliance. Engels said, "Only an intimate connection between industrial and agricultural production...will be able to deliver the rural population from the isolation and stupor in which it has vegetated almost unchanged for thousands of years" (Engels: "The Housing Question," Collected Works, Vol 18, p 313) As the continuation and extension of agricultural production, the agricultural and sideline products processing industry is reintegrated directly with agriculture. This is not only a powerful measure to activate agriculture, but also a major link to closely integrate industry with agriculture and combine town with country.

III

Since the processing of agricultural and sideline products by commune and production brigade enterprises is a new task, there are many problems to be solved.

First of all, some muddled views must be cleared away. For example, some people think that by transferring the processing of agricultural and sideline products to commune and production brigade enterprises, the industrial

development in cities may be affected; some hold that since the technical conditions of the commune and production brigade enterprises are poor, the quality of their products will not be up to standard and the cost of commodities will be raised; others take the view that since there is no distinction whether to carry on processing agricultural and sideline products in the cities or in the countryside, why should we take trouble to do so? These views are due to lack of understanding with regard to the course of historical evolution of agricultural and the sideline products processing industry, the evils in the present situation and the great advantage it will lead to. In short, the people who hold such views have not gotten a deep understanding that main efforts should be concentrated on raising agricultural production as soon as possible. In fact, the idea of taking agriculture as the foundation of the national economy has not taken root in their minds. We must give support to agriculture in all respects. To transfer the agricultural and sideline products processing to the communes and production brigades is one of the strategic measures which enable it to take the road of integrating industry with agriculture and sideline processing, the road of overall development, to accumulate funds through self-reliance, change the conditions of agricultural production, realize the four modernizations gradually and get rid of backwardness. Therefore, such a policy should be formulated: in accordance with the principle of being rational and economical and under the conditions that various technical and economic norms are the same in the main, industries that can be run in the countryside, especially agricultural and sideline products processing should be transferred to the communes and production brigades step by step.

Second, now that the principles have been laid down, how will they be carried out? We should proceed from actual conditions, make specific analysis and work out a rational economic policy. The agricultural and sideline products processing covers many trades and processions: there are staples such as cereals, cotton, oil as well as scattered minor industrial crops. We adopt various measures according to specific conditions. There are three categories in the main:

The first belongs to those which should be engaged in expanded production. The original layout of processing is fixed in general. With the increase of agricultural and sideline products in the days to come, the increased portion of agricultural and sideline products should be processed on the spot. Take pig hide processing for example. If all the slaughtered pigs are taken away out of the counties and communes regardless of their number, the enthusiasm of practicing the principle of more slaughtering for more hides will be hampered. The surplus pig hides should be retained in the counties and communes where they are raised for further developing their tannery enterprises: thus, the more pigskin they get, the more hides they will process.

The second category belongs to those which can be extended.

The original processing is highly concentrated in the cities. Some of it is irrational. It must be vigorously transferred to the communes and production brigades through hulling products and extending working procedure. Take the processing of forest products such as bamboo and wood for instance. With cumbersome materials, the processing requires huge manpower and simple technology but the output value and profits are not big. All the products and the special equipment can be transferred to the communes and production brigades. This will not only give support to agricultural production but also lighten the burden of the cities. It is beneficial to both sides.

The third category belongs to those which should be "transferred down." The original processings which are located near the countryside and whose existing production capacity is full or excessive will be "transferred down" step by step in the future and become a part of commune and production brigade enterprises. For example, the rough processing of cotton (rolling cotton) is a seasonal production. It should be closely integrated with cotton producing areas; as for grain and oil, a part of the processing which serves rural life should be handed over to the communes and production brigades so that it can be utilized comprehensively.

Third, during the transfer of the processing industry, attention should be paid to the correct handling of the specific policies concerned. When a change in ownership is involved, such as the transfer of resources of the communes and production brigades to the state or vice versa, economic accounting and rational compensation should be made. A relevant management system should be defined clearly, especially in the case of the "transferred down" enterprises and their products: We may turn them into joint ventures of communes or let them be run by the communes and controlled by the counties. Except for returning the profits obtained through processing to the communes and production brigades, everything must remain unchanged for the time being; we may put them under the management of the communes. Though the nature of ownership is not the same, the political and economic treatments of the former cadres, workers and staff members should not be affected. Whatever measures may be adopted, the original supply and marketing channels should remain unchanged and kept unimpeded. In addition, in adopting processing on given material supplied by the state or by extension of technology and coordination of working procedure, prices must be fixed reasonably and profits distributed in a rational way. Only by so doing will every positive factor be brought into full play and the development of the productive force promoted.

IV

On the processing of the agricultural and sideline products by commune and production brigade enterprises, some problems need further study exploration.

First, the problem of the relations between town and country. It must be understood that due to historical reasons, most agricultural and sideline products now are purchased and transferred to the cities for processing, with only a small proportion left in the countryside. Some comrades made a list of items that were purchased in a unified way by the state. They are cereals, oil, beans, cotton, linen, silk, sugar, tobacco, wine, pigs, cattle, sheep, hides, fur, bones, fish, eggs, flowers, tea, fruits, wood, bamboo, willows, vegetables, medical herbs and so on. The commune and production brigades are in no position to handle process them. Of all materials used by light industry, agricultural and sideline products occupy about 60 to 70 percent, but the proportion of the commune- or production brigade-run industry is even much lower. As far as the total output value is concerned, 90 percent of the agricultural and sideline products processing industry is located in cities, while 10 percent is in the countryside. Therefore, if the processing of agricultural and sideline products is transferred to commune and production brigades, acute contradictions between town and country will arise. How will the contradictions be handled? In my opinion, overall planning should be worked out. We can neither ignore the present state of production in the cities, closing the old or big factories while setting up new or small ones, or maintain the status quo onesidedly, leaving the state of affairs unchanged for a long time. We should handle them separately according to various conditions. Some processing of agricultural and sideline products run in the cities are more economical and rational. We should make full use of the existing equipment and maintain their utilization of capacity, but it is not suitable in general to expand the productive capacity in the cities, thus making the cities bigger and bigger. Some processing of agricultural and sideline products run in the cities are not so economical and rational. They should be shifted to the communes and production brigades in a planned way. There must be a certain period of transition. We cannot expect that the situation above can be changed within a single day. The ratio of purchasing to retaining must be defined clearly. In the days to come, the largest purchasing portion of agricultural and sideline products should be kept for processing in the communes and production brigades. By so doing, we can further bring into play the enthusiasm of the communes and production brigades for developing diversified economy and gradually readjust the layout and the relations between town and country.

Second, some problems on rough and fine processing. We have identical views on shifting rough processing of agricultural and sideline products to communes and production brigades. But whether the communes and production brigades should manage fine processing is still a controversial issue, which merits individual attention. It must be determined by the various state of the agricultural and sideline products and different conditions of the communes and production brigades. Due to lack of certain conditions, it is not appropriate for the communes and production brigades to run a higher-class and more complicated processing; they should be allowed to develop simple processing and increase the number gradually.

For instance, in the past, mulberry trees were planted and silkworms raised in the countryside while silk reeling and silk fabric weaving were done in the cities. But recently some communes and production brigades have run silk and silk fabric mills with encouraging results. The commune and production brigades are encouraged to develop cereals and oil processing and various food industries gradually (sweets, canned food, cakes and pastries, dairy products and so forth). It is also advisable for the communes and production brigades near the city and county where there are many retired workers with good knowledge of technical knowhow to develop a higher class agricultural and sideline products processing, especially those processing traditional articles of special products and handicraft arts such as embroidery and knitwears. Taking profits as a demarcation line, some comrades hold that fine processing of agricultural and sideline products which is bound to make big profits should not be handed over to communes and production brigades. This kind of view is incorrect. This "forbidden zone" must be broken down. If not, it will be difficult to narrow the "price scissors" between town and country and the gap between the rich and the poor.

Third, the problem of marketing after processing. Some comrades think that communes and production brigades can go in for agriculture and industry but not for commerce. The present situation is: On one hand, the communes and production brigades develop agricultural and sideline production while their products are sold to the state. On the other hand, the communes and production brigades are engaged in processing, while materials are supplied by the state (or purchased by themselves); still they are in no position to market their products. The relations of three-level ownership, that is, ownership by the commune, the production brigade and the production team--with the production team as the basic accounting unit--is cut off as is the case with regard to the relations among agriculture, sideline occupations, industry and commerce. Cadres of communes and production brigades remark: It is hard to become well-off if we only go in for agriculture and sideline occupations without paying attention to developing industry; if we fail to develop commerce simultaneously, the rural economy will be stagnant and lifeless; and so, it is hard to become really better-off. Therefore, it is permissible for the commune and production brigades to process their own agricultural and sideline products under the guidance of the state plan and market their industrial products under the condition that the state cannot manage to purchase their products or their products are not suited to be purchased by the state. This is a complex management of agriculture, industry and commerce, namely, a three-in-one integration of agriculture, industry and commerce. Thus, agriculture, industry and commerce are integrated. It is beneficial to promoting production, organizing the circulation of commodities (including reducing intermediate links and saving on turnover cost). It is also advantageous to increasing the income of communes and production brigades and expanding accumulation and distribution. This is the only way for the peasants to get rich.

FASTER TRAINING OF FARM MECHANIZATION EXPERTS WANTED

Beijing GUANGMING RIBAO in Chinese 26 Apr 80 p 1

[Article by Yang Zhihan (@799 2535 5060)]

[Text] The Agricultural Mechanization Board held a conference in Peking from 18 through 24 April on the subject of the work of schools and education. Representatives participating in the conference considered that, in order to serve the needs of a great development in our country's socialist agriculture, mechanized-agricultural institutes and schools, for the sake of the mechanization of agriculture, must educate a large number of capable personnel who are "both red and expert" to be engaged in the areas of scientific research, engineering/planning and management.

The conference analyzed the present situation of our country's lack of mechanized agricultural personnel. According to figures compiled, for the entire country at the county level or higher, technical staff comprised only 3.9 percent of the total of the staffs and workers of mechanized-agricultural manufacturing enterprises. Out in the extensive rural areas, technical personnel engaged in the mechanization of agriculture are even fewer. Using Hupei Province, which has been comparatively good in developing mechanized agriculture, as a standard, technical personnel in the mechanization of agriculture also took up only .6 percent of the total of all kinds of mechanized workers. To change this backward condition, the Agricultural Mechanization Board has outlined a plan that by 1985 the proportion of technical personnel will reach 8 percent of the staff and workers of mechanized-agricultural manufacturing enterprises, and by 1990 it will reach 13 percent. The conference studied measures that the mechanized-agricultural schools ought to adopt in order to reach this objective, considering that; aside from the regular day programs of higher educational institutions taking on the task of educating regular undergraduate students and graduate students, from now on, every school must actively operate a correspondence school and a night school and vie with each other to recruit students as soon as possible. It is also necessary to conduct 2-year and 1-year short courses and other short post-graduate courses, it being most important to train on-the-job engineering and technical personnel, managerial cadres, and a middle-level teaching force

for the mechanized-agricultural schools. At the same time, we must suitably increase the establishment of middle-level mechanized-agricultural vocational schools, and universally develop spare-time technical education for the staffs and workers, raising the scientific and technical level of the broad ranks of staff members and workers.

The conference discussed the questions of professional facilities, professional direction and general over-all professionalization of schools affiliated with the board, and brought up a series of corrective measures, as relevant. At the same time, it was decided to increase the establishment of projects for the development of energy resources for the use of agriculture, agricultural construction and environmental projects, the mechanization of livestock production, the mechanization of stock feeding, and a number of other modernizations such as electronic instruments and surveying technology.

The conference requested all schools, each on its own basis and under its own conditions, according to the area assigned to them and other special conditions, to do their utmost to create their own focal point of professionalization, form its special characteristics, and cause it to possess a special superiority in some respect or other, making a contribution to the modernization of our country's agriculture.

The conference considered that, taking the solution of the problem of our country's mechanized-agricultural industry, and basic technical theory and new technical applications in the mechanization of agriculture as the most important guidelines, the scientific research of schools affiliated with the board must also take on the tasks of product planning research and technological research. One must take care to complete properly the tasks of collecting, analyzing, studying and exchanging scientific and technical information. One must pay attention to the work of writing textbooks and teaching reference books and developing the modern instruments and equipment.

Assistant Directors for the Agricultural Mechanization Board Dan Tong [0030 4592] and Xiang Nan [7309 0589] attended the conference, and spoke on the education of many high-quality agricultural mechanization personnel, and other matters.

9634
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SUCCESSFUL ARTIFICIAL PLANT COMMUNITY

Beijing GUANGMING RIBAO in Chinese 3 May 80 p 1

[Article by Liu Quanlian [0491 0356 0256], "Study on Artificial Plant Community for Rubber and Tea Trees"]

[Text] The Yunnan Tropical Plants Research Institute, Chinese Academy of Sciences, has obtained gratifying results in its undertaking "Study on Artificial Plant Community for Rubber and Tea Trees" and has filled a void in our studies of tropical ecology. The Kunming branch of the Chinese Academy of Sciences recently invited scientists and technicians working in concerned departments to attend a meeting at the Yunnan Tropical Plants Research Institute to appraise the "Study on Artificial Plants Community for Rubber and Tea Trees." The results were affirmed and, moreover, the research was recommended for inclusion with the international items in "Man and the Biosphere."

The scientific research site, located in the remote forests of Xishuangbanna, occupies over 200 mu and is under the direction of the noted botanists and ecologists Qu Zhongxiang [2575 0112 3276], Zhu Yancheng [2612 1750 0015], Wu Zhengyi [0702 1767 6965] and Cai Xitao [5591 1585 7118]. It was successfully developed by the scientific research personnel of the Chinese Academy of Sciences' Yunnan Tropical Plants Research Institute through 20 years of energetic striving and meticulous plant breeding.

This "Study on Artificial Plant Community for Rubber and Tea Trees" describes a type of tropical multi-level diversified artificial plant community. This community follows the basic scientific laws of the structure and function of the ecological system of multi-level diversified tropical rain forests. It simulates these laws and creates a multi-level diversified artificial ecological system. The special features of this ecological system are the interplanting of tea and rubber trees, with the ratio changing according to changes in the climate and topography. The areas at lower elevations and lower latitudes are primarily rubber trees and as the elevation and

latitude increase the number of rubber trees per unit-area gradually decreases. Upon reaching a certain elevation and latitude, tea then becomes the main crop.

Rubber trees are a typical tropical tree type. China's tropical area is on the northern edge of the earth's tropical region, so if the traditional single-elevation single crop plan is followed, a cold wave would kill off a great number of rubber trees. In order to transform the traditional ways of planting, uncover more of the land and climate resources in our tropical areas, increase the production forces and strengthen disaster resistance, since 1960 the Yunnan Tropical Plants Research Institute has investigated the makeup of diversified artificial plant communities. After several years of effort they finally created this tea and rubber tree artificial plant community, which is comparatively well suited to the climate. In the structure of this artificial plant community, great amounts of sunlight reach the forest floor so the lower level of tea plants stores heat and is protected from the wind, which can change the "cold wet effect" into the "hot dry effect" and reduces the harmful effects of cold on rubber trees. The upper level of rubber trees provides suitable shade to prevent the tea leaves from suffering from spring drought. This plant community structure reduces water runoff, raises the utilization ratio of water and soil nutrients, and causes both the rubber trees and tea plants to flourish. In the rubber and tea forests on reclaimed land in Zhanjiang county, Guangdong, latex production is generally 10-20 percent higher per mu than that of land with only rubber trees. In the tea and rubber forests of the Puwen Farms in Yunnan, where tea is the main crop, the latex production of each rubber tree is 15-24 percent higher than that of land with only rubber trees. On four mu of land planted with both tea plants and rubber trees, each mu has tea leaf production about double that of land planted only with tea.

This research project has both progressive standards and suits our nation's special conditions, has established and stabilized a rubber tree production base for China, protects the ecological balance in our tropical regions, makes reasonable utilization of and develops our tropical natural resources, and has found an effective path to follow.

11582
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PRELIMINARY STUDY ON HETEROSIS, COMBINING ABILITY IN RICE

Beijing YICHUAN [HEREDITAS] in Chinese No 2, Mar 80 pp 17-19

[Article by Xu Jingfei [1776 7234 2431] and Wang Luying [3076 6424 2019], Genetic Teaching and Research Group, Department of Agriculture, Anhui Institute of Agriculture, Hefei: "A Preliminary Study on Heterosis and Combining Ability of Rice"]

[Text] In recent years research into the use of hybrid rice heterosis in our country has played an important part in increased grain output. But in the xian rice combinations presently being promoted, there still exist problems in long periods of growth, inconsistent grain setting rates, and excessively great differences in the period of growth for the male and female parent, which makes for difficulties in seed propagation. How to breed a new combination that will be early, produce bumper harvests, be resistant to disease and insect pests, and be a superior variety is a problem that has not yet been satisfactorily solved either in theory or in practice. In order to provide theoretical data for the breeding of a new combination of hybrid rice, we have conducted the experiments reported here.

1. Materials and Methods

Materials provided for experiment. For the male restorer line, three lines IR28-33, IR28-40, and IR28-43 bred from IR26, 75P12, and IR28 were used. For the female parent male sterile line, Zhenxian 97A, V₂₀A, V₄₁A, Nanzao A, Kemei A and Junxie A, 691A were used. An F₁ generation hybrid was bred by the incomplete double-row hybrid method to produce 35 combinations. For the male parent control variety was used seeds of the measured crossing of the male parent; the female parent control variety used the sterile free line of the same type, and the production control type used was Nanjing No 11.

The experiments were conducted in 1978 at the experimental farm of this institute (latitude 33.6°). All of the materials were sown on 6 May and transplanted on 6 June. Formation of panicles began on 14 June and 13 August, respectively. The design of the fields was laid out in random blocks repeated three times over. In the single row area, each area had 12 plants consisting of a single seedling. At the time of checking and

recording, 10 plants were examined in the middle of each block in addition to the two plants at the beginning and end of each block. Items checked included plant height, length of panicle, number of grains per head, effective number of panicles on each plant, total number of grains, actual number of grains, grain setting rate, weight per thousand grains, weight of grains per individual plant, and heading period.

Using Powers formula $\frac{\bar{F} - MP}{\frac{1}{2}(P_1 - P_2)}$, the relative heterosis of eight charac-

teristics was determined. Using the formula $\frac{F_1}{CK} \times 100$, the competitive

heterosis of grain weight for individual plants was determined. Also calculated was the mean value of parent pairs, the regression and interrelationship of the F_1 generation and the F_1 fruiting rate, the effective number of panicles on individual plants, the number of grains in each head, and the regression and interrelationship of the per thousand weight of grains and the weight of grains on a single stalk. Additionally, the following formula was used to determine combining ability:

$$\begin{aligned} \text{General Combining Ability: } & \sigma^2_{g_i} = \frac{\sigma^2_{ij} + \sigma^2_{ik} + \sigma^2_{il}}{\sigma^2_{ij} + \sigma^2_{ik} + \sigma^2_{il}} \times 100 \\ \text{Special Combining Ability: } & \sigma^2_{s_i} = \frac{\sigma^2_{ij} - \sigma^2_{ik} - \sigma^2_{il}}{\sigma^2_{ij} + \sigma^2_{ik} + \sigma^2_{il}} \times 100 \end{aligned}$$

2. Results and Discussion of Experiments

(1) Measurements of Hybrid Heterosis

In the experiments on these 35 combinations, heterosis for different characteristics were manifested in different ways. Strong heterosis in length of heads, grain weight for individual stalks, and stalk height that exceeded the heterosis of the parents showed up in 94.3 percent and 91.4 percent, respectively, of the total number of combinations. Secondly, in 71.4 percent, the number of grains per head exceeded the heterosis of the parents. Number of heads and per thousand weight of grains exceeded the heterosis of the parents in 60 percent of the cases. Fruiting rate in excess of the heterosis of the parents occurred in only 54 percent of the combinations. The period till heading was manifested in many forms. In 57.1 percent of the combinations, it was manifested in the positive direction of complete dominance or partial dominance; in a minority of the combinations, it was manifested in the negative direction of excessive dominance (excessively premature ripening). Inasmuch as combinations variety, there was a great deal of difference in the competitive heterosis for grain weight in each

stalk. Except for the seven combinations bred from the IR28-43 in which the degree of restoration was poor and quantity of output low, of the remaining 28 combinations, six had outputs lower than the Nanjing No 11, and 22 had outputs higher than the Nanjing 11. The extent of increased output was 3.71 - 32.19 percent.

Matters requiring discussion here are whether the weight per thousand grains in the F_1 generation is high or low is not determined by the disparity in grain weights of the parent pairs, but by whether the weight per thousand grains for one of the two parents is high or low. Whenever the per thousand grain weight is high for both parents, or whenever it is high for one parent and medium for the other, the per thousand grain weight for the F_1 generation also tends to be high. If the per thousand weight for the parents is too low, the F_1 generation's per thousand grain weight will show no dominance or only partial dominance. The fruiting rate of the F_1 generation is determined principally by the restorative powers of the restorer line and whether the sterile line's restoration properties are good or not. There is little relationship to the fruiting rate of the parent pairs themselves. The results of this experiment are that the restorer ability of the IR26 and the 75P12 restorer lines is quite strong, while the restorer ability of the lines bred from the IR28 is rather poor. Restorative properties in the Zhenxian 97A, Kemei A, and Junxie A female parents are quite strong.

A look at the maturation period shows that of the 35 combinations provided for testing, 22 matured earlier than the Nanjing 11, and 10 of these matured 10 days or more earlier. Results of this experiment show that when sterile lines with the same early maturation are crossed with restorer lines of different periods of maturation, the F_1 generation's maturation period will be determined by the maturation period of the male parent. If the male parent matures early, the F_1 generation will mature early, and if the male parent matures late, the F_1 generation will tend to mature late. In the case of Kemei A x 75P12 (an early maturing male parent), maturation period was 70 days (average amount of output per single stalk showed an increase of 12.38 percent over the Nanjing No 11). In the case of Kemei A x IR28 - 40 (a medium maturing male parent), the period of maturation was 75 days (15.47 percent); and in the case of Kemei A x IR26 (a medium-late maturing male parent), the period till maturation was 90 days. When similar restorer lines are crossed with different sterile lines, the period till maturation in the F_1 generation is also different. In some early maturing sterile lines, the genetic ability to transmit the early maturing property is quite strong as in the case of Kemei A, and Nanzao A. In some others the genetic transmittal ability is quite weak, as in the case of 691A and Junxie A.

The above results once again confirm already known facts, namely that whether heterosis in the F_1 generation hybrid will be great or small is determined by whether the genetic disparity between the parent pairs is

great or small and whether the superior characteristics of both parents are mutually reinforcing. Whenever the genetic relationship of the two parents is quite distant and their morphological and physiological differences are quite great with mutually reinforcing characteristics, the heterosis of the hybrid will also be quite strong.

(2) Four major characteristics between parent and offspring, and the interrelationship and regression among grain weights for individual plants.

In order to understand the relationship of characteristics between the F_1 generation and the two parents, and to understand the degree of bearing that the major characteristics of the F_1 generation have on the weight of grains from individual plants, we measured their interrelationship and mutual regression. Results are shown in Table 1.

1. Table 1. Interrelationships and Retrogression

1) 表1 相关与回归

2) 双亲平均值与 F_1 代的相关与回归				3) F_1 代主要性状与 F_1 代单株粒重的相关与回归			
4) 性 状	5) 自由度	6) 相关系数	7) 回归系数	8) 性 状	9) 自由度	10) 相关系数	11) 回归系数
12) 株 高	33	0.4293**	0.7872	20) 结实率与单株粒重	26	0.4284*	0.2421
13) 穗 长	33	0.2244	0.1961	每穗粒数与单株粒重	26	0.2536	0.0663
14) 穗 数	33	0.1092	0.1618	千粒重与单株粒重	26	0.2067	0.9501
15) 穗粒数	33	0.4346**	0.3731	21) 22) 23) 24) 豫丰 A × 75P12 军协 A × 1R28-33 珍丰 97 A × 1R26 南早 A × 1R28-47	8	0.9686**	1.9909
16) 单株粒重	33	-0.0316	-0.0880		8	1.0000**	2.8120
17) 千粒重	33	0.0805	0.9687		(23) 8	0.6098	2.8772
18) 结 实 率	33	0.1518	0.3819		(24) 8	0.8866	2.2615
19) 穗 重	33	0.1696	0.9081				

2. Parent Pair Average Value and Interrelationship and Retrogression of F_1 Generation

3. Major Characteristics of F_1 Generation and Interrelationship and Regression in Single Plant Grain Weights in F_1 Generation

4. Characteristic

5. Degree of Freedom

6. Interrelationship Coefficient

7. Regression Coefficient

8. Characteristic

9. Degree of Freedom
10. Interrelationship Coefficient
11. Regression Coefficient
12. Plant Height
13. Head Length
14. Number of Heads
15. Number of Grains Per Head
16. Grain Weight Per Individual Plant
17. Weight Per Thousand Grains
18. Fruiting Rate
19. Period to Maturation
20. Fruiting rate and grain weight per individual plant, number of grains per individual plant and grain weight per individual plant, weight per thousand grains and grain weight per individual plant
21. Number of heads per plant and grain weight per individual plant
22. Junxie A x IR28 - 33
23. Zhenxian 97A x IR26
24. Nanzao A x IR28 - 40

Table 1 shows that: (1) apart from the two characteristics of plant height and number of grains per head in which there is a notable interrelationship between the average value of the two parents and the F_1 generation, the interrelationship of other characteristics is not striking; (2) the effect on grain weight per individual plant of the number of heads per individual plant and the fruiting rate in the F_1 generation is great. The interrelationship coefficient of the two does not reach outstanding proportions, and the effect of the number of grains per head and the weight per thousand grains on the weight of grain in individual plants is fairly small.

(3) Measurement of General Combining Ability and Special Combining Ability

For the results of the use of average output per plant using 35 combinations in measuring general combining ability and special combining ability, please see Table 2.

1. Table 2. Analysis of Variance

1) 表2 方差分析

2) 变异原因	3) 自由度	4) 平方和	5) 均方	6) F 测验
7) 重复 (区组)	2	33.32	16.66	
8) X 组品种	4	1522.12	380.53	18.48**
9) Y 组品种	6	312.68	52.11	2.53*
X×Y	24	2051.63	85.48	4.15**
10) X×Y×重复(机遇)	68	1400.77	20.59	.

2. Reason for Variation

3. Degree of Freedom

4. Sum of Square

5. Mean Square

6. F Rest

7. Duplication (blocks)

8. X Block Varieties

9. Y Block Varieties

10. X x Y x Duplication (chance error)

Variation components may be figured from Table 2:

$$\sigma^2_x = \frac{M_x - M_{12}}{rn_x} = \frac{380.53 - 85.48}{21} = 14.05$$

$$\sigma^2_y = \frac{M_y - M_{12}}{rn_y} = \frac{52.11 - 85.48}{15} = -2.224^{1)}$$

$$\sigma^2_e = M(\text{environmental variance}) = 20.59$$

1) means variance may be equal to 0.

$$\sigma^2_{12} = \frac{M_{12} - M_e}{r} = \frac{85.48 - 20.59}{3} \\ = 21.63$$

Thus: General Combining
Ability

$$V_{gc}(\%) = \frac{11.83}{33.46} \times 100 \\ = 35.36\%$$

Special Combining
Ability

$$V_{sc}(\%) = \frac{21.60}{33.46} \times 100 \\ = 64.64\%$$

The above results show that the trait of grain weight per single plant is created by the gene's non-additive function (including dominance and the superior effect). Consequently, this measured result theoretically proves that the single plant output heterosis for self-pollinated paddy rice is quite strong. Both the general combining ability and the special combining abilities effects on average output per single plant for the 35 combinations was measured. In 12 varieties (lines), the general combining ability effect was highest with the restorer line IR26 (3.08). This was followed by IR33 (2.00), IR40 (1.78), and 75P12 (0.57). Of the sterile lines, Kemei A (1.45) and Nanzao A (1.42) were quite high with Junxie A coming next. Combinations with rather high special combining ability were, in order of their showing, $V_{41}A \times 75P12$ (8.36), Nanzao A \times IR28-40 (6.51), Zhenxian 97A \times IR26 (4.24), $V_{20}A \times$ IR26 (3.94), Junxie A \times IR33 (3.82).

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9432

CSO: 4007

BRIEFS

RAPESEED PURCHASE PLAN OVERFULFILLED--Beijing, 1 Jul--The state purchased 819,900 tons of newly harvested rapeseed by 25 June, topping the annual plan by more than 7 percent. Sichuan Province, China's biggest rapeseed producer, reported a bigger harvest than in last year. It sold 319,500 tons of rapeseed this year, 20 percent more than in 1979. Yunnan, Zhejiang, Anhui and Jiangxi provinces also overfulfilled their selling targets. Rapeseed is one of China's major sources of edible vegetable oil. Due to low temperatures, dry spells or heavy rains in some of the producing areas, total output this year is expected to be less than last year's. Yet the 1980 rapeseed harvest is still among the best in recent years. [Text] [Beijing XINHUA in English 0829 GMT 1 Jul 80 OW]

MORE SUMMER FRUIT AVAILABLE--Beijing, 1 Jul--The Chinese people are expected to have more watermelons, pears, peaches and lichees this summer. According to Ministry of Commerce statistics, the total fruit output this summer in 22 provinces, municipalities and autonomous regions is expected to exceed 1.6 million tons, more than 10 percent higher than last summer. The statistics also show that watermelons, despite an expected 10 to 20 percent rise in output this year over last, will reach the market later than usual because of low temperatures earlier this year. Measures have been adopted to ensure that urban residents will have fresher fruit than ever before. For example, the famous watermelons of Pinghu County, Zhejiang Province, are going directly from the fields to markets in Shanghai, China's largest city, instead of being handled by intermediary agencies. And fruit and melon growers are now allowed to open stalls and sell their products in many cities. [Beijing XINHUA in English 0803 GMT 1 Jul 80 OW]

ANIMAL HUSBANDRY CORPORATION--Beijing, 2 Jul (XINHUA)--The China National Breeding Stock Import and Export Corporation has been set up in order to speed up the modernization of China's animal husbandry. The corporation was established by authority of the administrative commission on import and export affairs of the People's Republic of China. The corporation will handle import and export of breeding stock and poultry, and grass seeds. Its work will be guided by the general bureau of animal husbandry of the Ministry of Agriculture. Its aim will be to improve animal and poultry breeding, increase herd raising capacity of the grasslands and further trade exchanges between China and other countries. [Text] [OW020740 Beijing XINHUA in English 0724 GMT 2 Jul 80]

PIG HIDE EXHIBITION OPENS--Beijing, 1 Jul--Over 10,000 Beijing residents flocked to the first national exhibition of pig hide products which opened here today, with men's, women's and other articles on show. Some 1,000 kinds of products with more than 10,000 samples are being displayed, and 400 kinds of them are being sold. All but four of China's provinces, municipalities and autonomous regions are displaying their products at the exhibition. Sponsored by the Chinese Ministry of Light Industry, the exhibition covers 6,900 square meters. An exhibition spokesman said that this was the first such exhibition held since the founding of the people's republic in 1949. From January to May this year, he continued, China produced more than 23 million pig hides, 60 percent over the same 1979 period. Twenty more new products made of pig hide were added. The 1979 pig leather exports accounted for one third of China's total leath products export volume in the year. [Beijing XINHUA in English 0819 GMT 1 Jul 80 OW]

SOUTHERN PROVINCES DISEASE, PEST SURVEY--Article by Liang Shenhong [2733 3234 3163]--The National Plant Pathogenetic Nematode General Survey group most recently dispatched a branch group from Guangzhou to work in the five provinces of Guangdong, Guangxi, Yunnan, Guizhou, and Jiangxi. This general survey group is organized by the South China College of Agriculture at the request of the Ministry of Agriculture. The damage to crops from plant pathogenetic nematodes is very great while studies on their prevention and treatment are a newly created science. Its development has been very rapid in foreign countries in recent years. The scientists of the field have carried out the work of identifying and classifying the pests. Their work has produced some effect in clarifying the condition of damage to crops and in formulating measures of prevention and control. For the purpose of catching up with and surpassing the advanced level of the world, the Ministry of Agriculture listed the project as one of the key projects of national scientific research and called, last year, a national conference in Guangzhou to formulate plans so that the species of plant pathogenetic nematodes in China, and the condition of their distribution and damage may be basically understood within the next 2 to 3 years, to form the foundation for future inspection, prevention, control and scientific research. Participants of this general survey work include the Plant Disease Inspection Center of the Ministry of Agriculture, Beijing Bureau of Pharmacology, related schools and academies of agriculture, 30 persons to represent these 10 organizations. After spending 2 months at the south China College of Agriculture for training they arrived at the suburb of Guangzhou at the end of March to proceed with pilot survey work to gain experience. Most recently, they have been divided into five teams to start surveying in the five southern provinces (districts). [Text] [Guangzhou NANFANG RIBAO in Chinese 28 Apr 80 p 1] 6168

FARMING, INDUSTRIAL, COMMERCIAL ENTERPRISES--Through a series of experiments with the form of joint enterprise of agriculture, industries, and commerce, a group of Chinese farms have changed the tradition of engaging in farming, simply to produce raw materials. Now, they can produce the raw materials, process them by themselves, and sell the products by themselves. This form has produced good economic results. In a little more than a year, 103 agricultural, industrial, and commercial joint enterprises have been either established or are in the planning stage in the agriculture and land reclamation systems of 28 provinces, cities, and autonomous regions. The practice

has resulted in a popular increase of accumulation. Of the various joint enterprises, the Chungqing Agricultural, Industrial, and Commercial Joint Enterprise netted 1.7 million yuan from its operation in 1 year, more than 3 times the total profits of the farm since its establishment. Joint enterprises are also beneficial for practicing specialized production. One after another, the joint enterprises of Beijing, Shanghai, and Tianjin have established dairy companies to carry out a union of production, supply, and sale for exploiting production potential and for more reasonable economic management. Due to the fact that the scale of business of a joint enterprise is greater than that of a farm, the number of products, the profits, and the tax payment have increased on a great scale and the contribution to the state is also greater. Some agricultural, industrial, and commercial joint enterprises also cooperate with communes and production brigades to support them and to cause an increase of income for the collective bodies of rural villages. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 17 Apr 80 pp5-6] 6168

SUNFLOWER ACREAGE DOUBLED--Beijing, 25 Jun--As of mid-June, China planted 12 million mu of sunflowers, doubling last year's acreage. This year, sunflower growing bases have been built in Heilongjiang, Jilin, Liaoning and Nei Monggol. Compared with last year, Heilongjiang has expanded its sunflower acreage by 2 million mu and Jilin and Nei Monggol have expanded their acreage by 1 million mu each. [OW010001 Beijing XINHUA Domestic Service in Chinese 1430 GMT 25 Jun 80]

FERTILIZER FOR RICE--The Agricultural Physics and Chemistry laboratory of Hubei Provincial Agricultural Academy has succeeded with its research and experiments using isotope tracer methods on the "single application total layer basic application method for nitrogenous fertilizer on paddy rice." Units concerned who conducted appraisal and approval of this method believe that this is an important technical innovation in the application of nitrogenous fertilizer to paddy rice that merits vigorous promotion. The "single application total layer basic application method for nitrogenous fertilizer on paddy rice" means a one time application, all at one time, of the paddy's needs for nitrogenous fertilizer during the current season in an amount equal to from 10 to 12 jin pure nitrogen per mu, mixing it thoroughly into the tilled layer of soil, after which no further applications are made during the same season. Numerous experiments confirm that this method of application increases the nitrogenous fertilizer utilization rate by from 40 to 50 percent as compared with the method of repeated applications formerly used in production in our country, and it increases the fixed quantity of nitrogen in the soil by from 5 to 15 percent. It also increases by 36 percent absorption by the late crop during the following season of nitrogenous fertilizer used during the previous season. This method of applying fertilizer is characterized by a supply that is "early," "constant," and "long lasting." It can increase the concentration of fertilizer in the soil, promote absorption by the paddy rice of the phosphate in calcium superphosphate, thereby causing the rice to green

up rapidly, to tiller profusely, and to grow steadily and healthily. Experiments and demonstrations have been conducted in Hubei Province in Xishui, Xingmen, Huanggang, Tongcheng, Chongyang, and Wuchang, and the results verify that this method of applying fertilizer produces about 10 percent greater output than the method of several separate applications. This method is handy in operation, saves labor, is suited to mechanization, and is very well received by the masses. [Text] [Beijing GUANGMING RIBAO in Chinese 5 May 80 p 2] 9432

FODDER INDUSTRY GROWING--Beijing, 25 Jun--China's fodder industry is being expanded to provide more meat, milk and eggs for the city population. According to incomplete statistics, there are now more than 40 big plants in China, each producing 3,000 tons or more a year. The total production in 1979 came to 390,000 tons, including the fodder produced by smaller plants. A number of plants producing fish and bone meal and fodder additives are now under construction. Fodder processors have enabled Beijing and Shanghai to increase their meat, eggs and milk supply. Scientific research has confirmed compound fodder is 20 to 25 percent more effective than single ingredient fodder. [Text] [OW261319 Beijing XINHUA in English 0817 GMT 25 Jun 80]

SILK WORM PARASITES CONTROLLED--Shenyang, 22 Jun--Chinese scientists have made two kinds of effective drugs to control *blepharipa tibialis* (chao), a parasitic fly which is a deadly enemy of Tussah silkworms raised in China for their durable and lustrous silk. The drugs can eliminate 93.5 to 97.5 percent of the parasitic flies on Tussah silkworms, thereby reducing the rate of the victimized silkworms from the previous 70 percent to the present 5 percent. Scientists have learned the fly's eating habits, life span and life cycle. Through quite a number of experiments, they produced the No 1 and No 3 chemical drugs, which neither harm silkworms nor affect the quality of cocoons. Successfully applied in Liaoning Province, China's leading Tussah silkworm cocoon producer, the drugs have been introduced to other parts of the country. Scientists who took part in the research came from the Liaoning Provincial Sericulture Research Institute, the Beijing Agricultural College, the Chinese Academy of Sciences and other research institutes. [Beijing XINHUA in English 1701 GMT 22 Jun 80 OW]

CSO: 4020

ANHUI PARTY COMMITTEE CALLS MEETING ON FISHERY PRODUCTION

OW061642 Hefei Anhui Provincial Service in Mandarin 1100 GMT 5 Jul 80

[Excerpts] The Anhui Provincial CCP Committee on 25 June called a meeting of its standing committee to hear a report on speeding up Anhui Province's fishery production by Comrade (Chen Lisheng), director of the provincial water conservancy bureau. The meeting also discussed new ways to accelerate Anhui's fishery development. Leading personnel at various levels were urged to thoroughly implement related policies, sum up previous experiences and lessons, promote advanced experience in fishery production, popularize as well as improve scientific fish-raising techniques, work hard to change the backward state of Anhui's fisheries, and bring about a swift rise in fishery production so as to meet the needs of the people and the four modernizations.

The meeting of the standing committee of the provincial party committee was presided over by Comrade Zhang Jingfu, first secretary of the Anhui Provincial CCP Committee.

Although Anhui Province has made certain achievements in fishery production since the conclusion of the party's third plenary session, the speed of development is rather slow and there are still many problems to be solved. One of the glaring examples is the insufficient implementation of policies on fishery production and the inadequate solution of the right to use the water surface. There is a tremendous waste of water surface. At present, only half of Anhui Province's 8 million mu of water surfaces are being used for fish raising.

The meeting held that in order to speed up Anhui's fishery production, it is first necessary to relax policies. With regard to the right to use water space, it can be exercised in the form of state operation, joint (?state and commune) operation, joint commune and production operation, and joint brigade and production team operation. In the case of collective operation, it is necessary to organize full-time teams or full-time groups. As for the scattered small ponds, fishery production can be contracted to the households and individuals who are specialized in fish breeding. In formulating the policy on management, it is necessary to provide more benefits for the masses of people by allowing them to exercise the right to raise, eat and

sell their own fish. Meanwhile, strenuous efforts should also be made to promote advanced experience so as to encourage the masses of people to engage in fishery production with greater confidence. Good experiences in fishery production have been accumulated by many advanced fish breeding units in Anhui Province. Their experiences must be thoroughly summed up and extensively promoted to speed up Anhui's fishery production.

The meeting pointed out that simultaneously with learning from other fraternal provinces' experiences, efforts should also be made to study and promote scientific fish-breeding techniques, give full scope to all existing specialists, and discover new talented people in the field of fishery production. Meanwhile, cadres with professional knowledge and who are in the prime of life should be promoted to leading posts.

Other related questions on fishery production were also discussed at the meeting, including further utilization of the water space of Chaohu and Taipinghu lakes, allocation of fishery loans, subsidies for losses, fish raising by individuals, and demarcation of water space between different units.

CSO: 4007

AGRICULTURAL ACHIEVEMENTS ANNOUNCED

Beijing GUANGMING RIBAO in Chinese 2 May 80 p 2

[Article by Zheng Mingshui [6774 2494 3055], Guo Yingkui [6753 5391 7608], and Qiu Guangzhong [6726 1684 6988]: "Outstanding Achievements Made by Fujian Academy of Agricultural Sciences"]

[Excerpt] While the broad faculty of the Fujian Academy of Agricultural Sciences was accomplishing its teaching responsibilities it also actively carried out scientific research with outstanding results. At the most recent scientific research award conference held by the Fujian Provincial People's Government in 1979, of the 61 major scientific research awards given throughout the province, the Fujian Academy of Agriculture won 10 awards, three of which were first place awards and fully half of the first places awarded.

Xie Lianhui [6200 5114 6540], a lecturer in the Plant Virus Research Laboratory of the Plant Protection Department, made investigations in over 154 brigades in 45 counties (municipalities) and discovered curious viral symptoms in paddy rice. After five years of research Xie proved that this was a new paddy rice viral disease. Xie named this the cuai [4662 4253] disease, which raises the world's total number of known paddy rice diseases from 14 to 15. This research received experts praise both nationally and internationally. Chen Zhenguang [7115 2182 0342], an assistant professor in the Fruit and Tea Genetic Breeding Group of the Horticulture Department, induced for the first time ever the growth of orange pollen plants. This research achievement is of great value in improving predictions made in breeding, by reducing the number of years required to breed trees. Zhang Guman [1728 6253 2581], a lecturer in the Vegetable Research Laboratory of the Horticulture Department, discovered from the laws of heredity the effect of gene replacement in gourds and mellons turning sour, and also suggested possible steps to prevent this problem. These three research achievements all received first place awards.

RESEARCH ON CITRUS FRUITS SUCCESSFUL

Beijing RENMIN RIBAO in Chinese 16 Apr 80 p 4

[Article by Longxi Prefectural Institute of Agriculture, Fujian Province:
"Successes Scored in Experiments With Cultivation of Dwarfed Citrus Trees"]

[Text] After 3 years of authentication in production, results are very good from experiments in the cultivation of dwarfed citrus trees performed by the Longxi Prefectural Institute of Agriculture of Fujian Province.

They selected six dwarfed stock of Jindou and Yichang oranges, which have strong resistance to disease, broad adaptability, and abundant resources and grafted them to five varieties of Lu Mandarin oranges and Tong Mandarin oranges. Of all the grafts, the grafting of the Jindou orange to the Lu Mandarin orange was the most ideal combination. Plants measured 94 centimeters in height and not only were their properties consistent, but their quality was very good too. Furthermore, they could be field planted the same year and they would bear fruit the same year. Three years after field planting, per mu yields were from 2400 jin to 8500 jin. They are currently undergoing experiments for promotion in Fujian, Guangdong, and Sichuan.

Dwarfed citrus plantings bear fruit early, have high yields, low cost, are easy to care for, and are the future direction for intensive production of citrus.

9432

CSO: 4007

BRIEFS

SUGARCANE SEEDLINGS RAISED FROM CELL TISSUE--The Sugarcane Institute of the Fujian Agricultural Academy has obtained bumper harvests of sugarcane by using the tissue culture method to grow 7 mu of spring-planted sugarcane. Recently, technicians conducted on-site checks on two test plots involved, one of them consisting of .95 mu and another of .22 mu, determining per mu yields of sugarcane to be 17,189 jin and 21,433 jin respectively, and a sugar content of 14.64 percent and 14.46 percent respectively. The tissue culture method entails taking a small piece of cell tissue from the leaf stem or spikelet, placing it in a synthetic culturing medium, and using artificially controlled temperature and light to make it grow and develop. The Sugarcane Institute of the Fujian Provincial Agricultural Academy began research into the tissue culture method of propagating sugarcane shoots in 1978. Within a year, the institute successfully grew nearly 40,000 test tube cane shoots, and last spring transplanted them to open fields for growth, with a survival rate of about 90 percent. Formerly sugarcane production depended on use of a stalk of cane to grow shoots, a method that not only used up a lot of cane stalks, directly impairing cane sugar production but had a low coefficient of propagation as well. Use of the tissue culture method for growing sugarcane sprouts has brought high yields in open fields and has provided experience for the gradual factory-style production of sugarcane shoots. It has opened a new avenue to a saving in sugarcane stalks used to grow new shoots, and has increased sugar output. [Text] [Beijing RENMIN RIBAO in Chinese 29 Apr 80 p 2] 9432

FUJIAN SUGARCANE--The season of pressing sugarcane to make sugar is about to close in Fujian Province. The yield of sugar in the province reached 360,000 plus tons, surpassing the highest record in history. Compared with the previous season, the increase is 9.3 percent. Fujian Province is one of the major sugar producing regions in China. Its sugar production is second in the country. In recent years, the policy of combining sugarcane and grain has been implemented gradually. Sugarcane farmers receive grain supplement for the sugarcane they cultivate; therefore, the farmers are more positive in planting sugarcane. The sugar factories in the various areas have practiced reform and reconstruction in a big way. In the past few years, there has been a 43 percent increase of sugar processing machinery and the workers have tried to find ways of improving the quality of sugar they produce. According to statistics, the rate of superior grade sugar in the products of the province this year is raised from last year's 14.9 percent to 24.8 percent. [Text] [Guangzhou NANFANG RIBAO in Chinese 21 Apr 80 p 2] 6168

FUJIAN SPRING AFFORESTATION--As of early April, Fujian Province had afforested more than 3.25 million mu to exceed plan by more than 150,000 mu. During the same period 13.81 million trees were planted throughout the province along roadsides, along bodies of water, around villages, and next to dwellings. During this year's spring afforestation, every place throughout the county emphasized the suiting of methods to local circumstances, selecting suitable places for the planting of all different kinds of trees in an outstanding achievement. The famous overseas Chinese homelands of Nanan Longhai, Changtai, Putian, and Xianyu counties completed their spring afforestation tasks in excess of quotas. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 25 Apr 80 p 2] 9432

FUJIAN ANTIDROUGHT CONFERENCE--On 26 June, the Fujian Provincial CCP Committee and the Fujian Provincial People's Government held a conference to study measures to resist drought and reap a bumper agricultural harvest and mobilize the various departments to effectively support antidrought work. Drought in the province this year is serious, spreading fast and causing serious losses. Therefore, it is necessary to grasp the present situation, mobilize the people, overcome drought and do a good job of resisting drought and protecting seedlings. This is the central task in the countryside that precedes everything else. It affects the development of the national economy. To support drought resistance, the Fujian Provincial CCP Committee and the Provincial People's Government have decided to allocate 2 million yuan, 2,000 tons of cement and 5,500 tons of fuel oil. Drought is very serious in Longxi, Jinjiang and Putian prefectures. [Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 27 Jun 80 HK]

FUJIAN ANTIDROUGHT CIRCULAR--On 26 June, the Fujian Military District issued an emergency circular to the PLA units and the militia throughout Fujian on actively plunging into the struggle to resist drought and insure a bumper agricultural harvest. The circular revealed that this year, the dry and hot weather arrived earlier than before. Drought is worsening in the province, seriously affecting the growth of early rice, peanuts and sugarcane. The circular said that resisting drought and insuring a bumper agricultural harvest is the most pressing job at present. PLA units must organize manpower and material to actively support the localities to resist drought, help repair tools for resisting drought and solve practical problems. The cadres of the people's armed forces departments at all levels must organize and mobilize the militia to go deep into the front line of antidrought work. The provincial military district has also decided to transfer the militia artillery units to make artificial rain. [HK011013 Fuzhou Fujian Provincial Service in Mandarin 1035 GMT 29 Jun 80]

CSO: 4007

BRIEFS

GANSU BEET BASE--Lanzhou, 25 Jun--Li Dengying, secretary of the Gansu Provincial CCP Committee, recently presided over a forum sponsored by departments concerned of the provincial party and government organs to discuss the question of building the beet base in Hexi corridor, Gansu. In less than 4 hours the forum adopted a decision to build the beet base in Hexi corridor and to increase the beet acreage to 80,000 mu in 1981. Three days later the Gansu provincial party committee and provincial people's government approved all decisions adopted by the forum. [OW271231 Beijing XINHUA Domestic Service in Chinese 0216 GMT 25 Jun 80]

CSO: 4007

PREPARATIONS FOR LATE RICE CROP UNDERWAY

Heyuan County

Guangzhou NANFANG RIBAO in Chinese 5 Jun 80 p 2

[Article by Qui Hantang {8002 3352 1016}: "Heyuan County Diligently Readies Late Crop Seedling Lands"]

[Text] Throughout Heyuan County diligent work is being done to ready the land for late crop seedlings. As of 24 May, the total seedling area for which fields had been prepared and fertilizer applied amounted to more than 19,500 mu, which is 60.9 percent of the county's total area for late crop seedlings. To more than 13,000 mu, 1,500 jin of uncultivated green manure was added per mu; to more than 4,000 mu, 300 dan of fertilizer and soil was applied per mu.

In the readying of its seedling fields, Heyuan County lay stress on the growing of strong and sturdy seedlings as an important measure for obtaining a bumper harvest in the late rice crop. In mid-May, the county CCP committee organized the deputy secretaries responsible for agriculture and the technical agricultural cadres in the party committees of each commune for an on-site summarization of the experiences of the Queba Brigade of Lanko Commune. This brigade, which since 1965 has given rather careful attention to doing a good job in readying late crop fields for seedlings and in nurturing strong and sturdy seedlings, has increased output of late crop rice in 12 of 15 years, with a slight decrease in output for 3 years. Even though last year's late crop was stricken with the "cold dew wind," total output was still 2.7 percent higher than for the previous year. Following on-site summary, the county CCP committee spread the experiences of the Queba Brigade throughout the county.

Lian County

Guangzhou NANFANG RIBAO in Chinese 5 Jun 80 p 2

[Article by Wu Liguan [0702 4409 0385]: "Lian County Vigorously Promotes Zayou and Guichao Superior Varieties"]

[Text] Even while doing a good job of field care of the early rice crop, Lian County moved promptly to prepare for late rice crop production. As of late May, the planned planting throughout the province of 220,000 mu of the superior varieties, "Zayou" and "Guichao" as a late rice crop was already entirely in place, and the various kinds of chemical fertilizers and farm chemicals are in process of being urgently allocated and transported. The seedling growing area, the accumulation of mud and manures of various origins, and the quantity of burnt lime are all greater than in former years.

Lian County's early crop production season has been delayed for longer than usual this year, so the production season for the late crop appeared likely to be more urgent. In order to catch up with the season, they decided on full scale promotion of early maturing high yield superior varieties. For the late crop this year, the whole county is getting ready to plant more than 160,000 mu of "Zayou," which is 77 percent of the total area to be planted to late rice, and more than double the amount planted last year. The remainder will be planted with the superior variety, "Guichao." In addition, they have also made two plantings of seedlings so as to be sure not to be too late in completing the transplantation of the seedlings.

Early Maturing Varieties

Guangzhou NANFANG RIBAO in Chinese 5 Jun 80 p 2

[Article by Li Shanfa [2621 0810 4099] of the Provincial Agricultural Department: "Introduction of Several Early and Medium Maturing Varieties of Late Crop Rice"]

[Text] 1. Nankezhao

Nankezhao was crossbred at the Huilai County Institute of Agriculture using a late crop xian, Zhunan No 1 and a Kelu. Per mu yields are from 700 to 800 jin. Entered in late crop district experiments at 38 places throughout the province last year, average per mu yields were 806 jin, which placed it in first place among early maturers.

Nankezhao is an early maturing late crop hybrid variety. Its total vegetative growth period is about 130 days; it grows to a height of about 80 centimeters; its stems are sturdy; its tillering ability is strong; its heading rate is high; heads are large; per thousand weight of grain is from 25 to 26 grams; it shows good resistance to dropping

of grain; its fertilizer requirements are moderate; it is resistant to lodging; and it shows moderate resistance to blast of rice. If, however, it receives excessive nitrogen during the mid-stage of growth, it becomes prone to bacterial blight and its resistance to sheath and culm blight becomes weak. It is suitable for growth in fields with moderate or better fertility. It is usually sown during the "Slight Heat" (early July), and requires about 25 days to produce mature seedlings. Between 200,000 and 250,000 seedlings are planted per basic mu. During the mid-period of growth, attention must be given to draining away of water, sunning of the fields, and rotting shoots. During the late period of growth, applications of top dressing should not be excessive, particularly side dressings of nitrogenous fertilizers.

2. Guiyangai 121

Guiyangai 121 was hybridized through the joint work of the Guangdong Provincial Institute of Agriculture, the Agricultural Research Station of Songgui Commune in Yunan County, and the Loding County Superior Varieties Farm by using a Longyangai and a Songjiazao. In performance at district experiments held throughout the province last year, average per mu yields were 781.5 jin, placing it in second position among early maturers.

Total vegetative growth period for this variety is about 135 days, and it is a medium maturing late crop variety. It grows to a height of from 85 to 90 centimeters. Its leaves are straight and narrow, its growth luxuriant, effective number of heads fairly numerous; each head has about 90 grains; its fruiting rate is about 80 percent; and its per thousand weight for grains is about 22 grams. It is strongly resistant to coldness, mildly tolerant of fertilizer, and shows definite resistance to bacterial blight and sheath and culm blight. Its output of rice is high, and rice quality is quite good. Tillering ability, however, is weak, and it tillers rather late. Spikelets tend to abort and side branches tend to wither. Large amounts of fertilizer easily cause lodging. It is readily grown in fields of medium fertility. Between 150,000 and 180,000 seedlings are planted per mu. There should be application of sufficient basic fertilizer, early application of top dressing, and avoidance of side dressings of nitrogenous fertilizer. During later growth stages, fields should be kept wet to prevent premature withering of side branches.

3. Yusuobao

Yusuobao is also called Yulinbaoxuan or Yubaoxuan. It was bred from the Baoxuan No 2 line by the Yulin Prefecture Institute of Agriculture in the Guangxi-Zhuang Autonomous Region. In district experiments held last year in Zhaoqing Prefecture, its average per mu yields were 808 jin.

Total vegetative growth period for Yusuobao is about 140 days, maturing earlier by 6 to 8 days than Baoxuan No 2. It is a medium-maturing late

crop rice. It grows to a height of from 90 to 100 centimeters. Its shape is compact, its leaves small and straight, its heads medium large with each head containing about 100 grains; its fruiting rate is about 90 percent; unhusked grains are plump; rice quality is good; and output rate is high. Fertilizer needs are sparing. It shows strong resistance to both bacterial blight and sheath and culm blight, and insect pest infestations are also slight. It does not resist lodging, however. During the late stage of growth, it is very sensitive to water, and if drought or a dry spell occurs, leaves readily turn yellow and wane early. It is suited to growth in soil of moderate fertility. Age of seedlings at time of transplantation is about 30 to 40 days. The method of fertilizer application to be used is the one that makes heavy application at the beginning, light application at the end, and a supplemental application in the middle, but potash and fertilizer applications should also be given in order to strengthen resistance to lodging. In the final stage, water should not be withdrawn too early so as to prevent premature dying of the plant and the impairment of seed weight.

9432

CSO: 4007

COOPERATION BETWEEN STATE FARM, COMMUNES HELPS BOTH

State Farm Promotes Cooperation

Guangzhou NANFANG RIBAO in Chinese 27 Apr 80 p 1

[Article: "State Farm Exercises Strict Self-Discipline, Communes Show Good Sense; Xinglong Overseas Chinese State Farm Takes Initiative to Improve Farm-Commune Relations"]

[Text] The Party committee of the Xinglong Overseas Chinese State Farm took the initiative to improve farm-commune relations, and mutual respect, help and harmonious coexistence of the farm and the local communes promoted the development of the farm's production. Today, the farm has returned all the investment the state has made in it over the years, and last year paid to the state 4.3 million yuan in profit, which was a 48.5 percent increase over 1978.

The Xinglong Overseas Chinese state Farm has 160,000 mu of land and a population of over 25,000. Returned overseas Chinese who come from 18 countries and regions make up about 70 percent of the population of the farm. Because of the large population and the extensive land holdings, contacts with the outside are extensive. In the past, the farm had mutually supportive relations with the surrounding communes and brigades, but sometimes some sort of dispute would occur. After the smashing of the "gang of four," the state farm Party committee, proceeding from the general situation of unity and stability recognized that the state farm is the property of all the people and should play a leading and exemplary role, and took the initiative to improve relations between the farm and the communes. They recognized that peasants had lived on this land for generations, and the farm and the surrounding communes had had several mergers and separations; thus in resolving disputes, the question of history and questions of the present should be combined to adopt a method of mutual consultation. At the same time, both sides should look ahead, emphasizing unity. With regard to some questions, Lin Biao and the "gang of four" should be taken into account and an eye kept on mutual support in the future to improve production.

On the basis of the above understanding, the Party committee of the farm convenes a conference once or twice a year to solicit the views of the communes. When a problem appears in farm-commune relations, the leadership comrades of the farm Party committee personally go out to discuss it with commune cadres and arrive at a satisfactory handling. In the first half of 1977, there was some random cutting of farm crops, and three teams of the Blandu Brigade, Donghe Commune, cut down some of the Twenty-eight team's rubber trees on some land over which there was some disagreement. At this time, the farm's attitude was clear. On the one hand they taught the staff and employees that they were not permitted to say things which were not good for unity, and on the other, went to the commune, and together with the commune cadres studied and discussed methods for resolving the dispute. Because the commune cadres did good mass ideological work, they quickly stopped the error of stealing farm rubber trees. The farm leadership personally handled all instances of offenses against peasant interests, and took the initiative to bear responsibility and set strict demands on themselves. On one occasion, the commune members of the Nanpo Production Team of Liji Commune let loose some pigs, which damaged some cash crops of the farm's Forty-fourth Team. The pigs were killed by the employees, which provoked an incident. When the farm found out about it, they ordered the operational area to compensate the peasants for their loss and apologize to the production team. The production team cadres also taught the commune members to protect state property and carefully took measures to lock up the pigs and collect their manure.

Emphasizing the general situation, looking ahead in unity, helping each other out and supporting each other is the key to having good farm-commune relations. For many years, the farm has done its utmost to help the surrounding communes resolve problems which occurred in production, livelihood, communications and transport. This farm has experience in planting tropical crops, and in addition to supplying the surrounding communes with seedlings, they have also helped them train technicians, or sent technical workers to the communes to be technical guides. In the 1960's, Liji Commune planted pepper and lost almost all of it, but in the 1970's, with the vigorous assistance of the farm, there was great progress in pepper, and last year it reached 1,080 mu and became the one commune that planted the most pepper on the whole island. Last year the commune's gross income was 4.1 million yuan, and just 800 mu of pepper earned 1.2 million yuan.

The farm takes the initiative to help the communes, and the communes also vigorously support the farm. The members of Dazhou Brigade of Donghe Commune protect the farm's rubber trees, and every time a typhoon blows down the farm's rubber trees, the members and masses all take the initiative to help the farm raise the rubber trees that have been blown down. The farm's First Operational Area adjoins the Zhangxing Brigade of Heping Commune in Qiongzong County, and apart from helping the Li and Miao masses in this area plant and graft rubber trees and supplying them with tools for cutting rubber, they have also sent staff to help them build brick stoves and do fertilizer, capital construction and housing improvement work, which has earned them the praise of the Li and Miao people.

Promoting Farm-Commune Relations

Guangzhou NANFANG RIBAO in Chinese 27 Apr 80 p 1

[Commentary: "Looking Ahead in Unity"]

[Text] How a state farm improves farm-commune relations is an important question which concerns maintaining a situation of stability and unity, guaranteeing the continuous development of farm and commune production. Proceeding from a general situation of stability and unity, the Xinglong Overseas Chinese State Farm has self-consciously helped the surrounding communes resolve difficulties in production, and through consultation has resolved some disputes of both sides. Now the farm and communes are coexisting harmoniously, there is stability and production is developing. Their experience in taking the initiative to correctly handle the farm-commune relationship should be praised and promoted.

Under the leadership of the Party and with the support of the peasants, Guangdong Province's state farms have planted and produced great areas of rubber and other tropical crops, and some farms have developed grain production and production of other cash crops, and made a contribution to socialist construction. Some farms are turning a losing situation around and struggling to change as quickly as possible. For state farms to do a good job of production, they must secure the support of the local masses and must establish comradely relations with the local masses. What is especially important is that state farms fully recognize their own position as being the property of all the people, and whether in developing production or in handling farm-commune relations, they should play a leading and exemplary role to set a standard for the peasants. By proceeding from this point, the Xinglong Overseas Chinese State Farm looked at the overall situation and, exercising strict discipline, took the initiative to help the communes improve production, and as a result won the respect of the local communes and smoothly resolved some disputes.

Of course, the Party organizations of the communes surrounding the state farm should maintain principles and resolutely operate in accordance with the Party's policies and directions. As for wantonly cutting down state farm crops, behavior which damages state property, the masses should be mobilized, relied on and educated to resolutely put a stop to it. As for inciting the wanton cutting down of state farm crops, destroying production, people who have been repeatedly instructed but fail to change should be dealt with severely, and must be punished in accordance with the law. As for questions which are the legacy of history, on the basis of respect for history and in view of the present situation, yielding in the interests of unity, both sides should sit down and discuss together, and actively seek truth from facts to resolve the issue suitably.

We believe that if both farm and commune look forward in unity, mutual respect and mutual support, then farm-commune relations will get better and better, strengthen and develop a political situation of stability, unity and vitality and vigorously promote the development of production.

IMPORTANCE OF WILD RICE RESOURCES STRESSED

Guangzhou NANFANG RIBAO in Chinese 22 May 80 p 2

[Article by Luo Jianzhong [5012 1696 0022], Guangdong Provincial Scientific and Technical Information Office: "Save Wild Rice Resources"]

[Text] Wild rice is a precious resource for agricultural production. It is not only an indispensable primitive material for domestication and for the breeding of new hybrid varieties, but it also has extremely great value for the study of the origins, the ecology, the classification, the genetics, and the physiology of rice. Every nation in the world is hard at work studying and making use of it.

Our province is the primary source of wild rice resources, and it is the place in which wild rice was first discovered in our country. In 1926, the famous paddy rice expert, Professor Ding Ying [0002 7336], discovered the wild rice, which grows over a wide area in our province, and in 1932, he first used Guangzhou wild rice for crossing with cultivated rice to produce late crop "Zhongshan No 1." He is the old ancestor of the "Gaotai," "Baixuan No 2," and of "Zhongshanhong," and "Zhongshanbai," which have been widely promoted in our province. In recent years, however, as a result of changes in the system of agriculture in our province and the requirements for high output cultivation, emphasis has been placed on the breeding and improvement of short stem, early ripening, high yield varieties with an attendant neglect of research on resistance to disease. There simply has been no systematic investigation, collecting, organizing, study or use of the precious wild resources of our provinces. During the rampaging period of the "four pests," in particular, serious damage was done to wild rice resources, with even some of the wild rice data collected in the past having been lost. Wild rice lacked people to care for it. Left in nature to live or die by itself, much wild rice has been eliminated in nature. At the same time, because of large scale clearing of land and the large scale cutting of forests, serious damage has been done to wild rice resources. Unless steps are taken, it may become extinct within a short period of time. Saving the wild rice resources and continuing the precious natural heritage of agriculture is already an urgent problem in agricultural science.

The investigation, collection, and study of wild rice is a research work that involves many disciplines. Large in quantity and broad in scope, this work requires coordinated and cooperative efforts. Internationally some international organizations have been established to make use of international cooperation and research by many disciplines. Since 1978, units of the Paddy Rice Institute of the Academy of Agriculture in our province has been undertaking examination of wild rice resources, which are widely spread throughout Boluo County, and has collected 132 specimens of common wild rices. Survey work of wild rice in the Hainan administrative district has also been reported complete. All this work has made a contribution to the treasury of rice resources in our province and our country. But from an overall standpoint, the units involved are not numerous. We hope that leadership on all echelons in our province as well as all concerned units will rapidly formulate a plan for the investigation, collection, and use of wild rice resources, and that they will rapidly collect our province's wild rice resources in one place. Until this is done, there must be more protection given to the ecology and environment in prefectures where wild rice resources are concentrated, and they should not be willfully destroyed.

9432

CSO: 4007

COST, SUCCESS OF COUNTY RICE DISEASE, INSECT CONTROL GIVEN

Guangzhou NANFANG RIBAO in Chinese 14 May 80 p 1

[Article by Hu Cheng [5170 2052] and Zhang Pindong [1728 0756 2639]:
"Wengyuan Implements Cooperative Control System Against Rice Diseases
and Insect Pests; Rate of Outbreaks of Plant Diseases and Insect Pests
Declines to Lowest Record in History"]

[Text] By implementing a cooperative system of control over paddy rice diseases and insect pests, Wengyuan County has saved a large quantity of farm chemicals, reduced farming costs, and effectively controlled outbreaks of plant diseases and insect pests.

This county formerly used production teams as the units for control of diseases and insect pests. As a result, monitoring reports were frequently inaccurate and chemicals were either applied to no effect or else applied belatedly for a great waste of farm chemicals without achieving required results. Beginning with the late crop in 1978, this county instituted the cooperative control of paddy rice diseases and insect pests. Throughout the county, brigades pooled their funds (at an estimated levy of 1 yuan per mu, with any shortfall found in the year end accounting being made up), unified command, seized the opportune time for applying chemicals, and conducted a unified eradication of insects. They unified their purchase system, centralized use of farm chemicals and the instruments used to apply them, and made unified use of plant protection personnel.

More than a year's experience has demonstrated that use of a cooperative control method not only reduces the quantity of chemicals used, but also shows striking effectiveness in the eradication of insects and the elimination of diseases. According to the statistics, in 1978 the quantity of farm chemicals used throughout the county declined 17.3 percent from the 1977 quantity used before implementation of cooperative control. Last year it again declined by 8 percent over the 1978 amount. The cost of chemicals per 100 jin of paddy declined from .35 yuan in 1977 to .16 yuan in 1979, and the incidence of disease and insect pest outbreaks declined to the lowest record in history. In the case of paddy borers, for example, damage from these borers to the 1977 late crop was 1.03 percent, but for

last year's early crop it was only 0.0001 percent. During this current year, the entire county has further improved its cooperative control forces. In mid-April the first generation of paddy borers was flourishing and each commune made best use of its plant protection personnel to launch a prompt attack with chemicals to eradicate the insects. Inspection has shown the insect eradication rate to have been better than 99 percent.

9432

CSO: 4007

CONTROL OF RICE NECK BLAST DISCUSSED

Guangzhou NANFANG RIBAO in Chinese 20 May 80 p 2

[Article by Lai Zhenru [6351 4176 1172], Plant Protection Station, Provincial Department of Agriculture: "How Can Rice Neck Blast Be Controlled?"]

[Text] Rice neck blast is a disease of rice during the heading stage. Usually it begins to break out at the neck just below the head sometime between the end of the booting stage and the beginning of the heading stage. It causes a great amount of damage to the rice. If it occurs only lightly or tardily, it impairs the fruiting rate and the grain weight. If it occurs early or heavily, it results in blast of rice or partial blast of rice. Usually the damage amounts to from 10 to 30 percent of the crop.

At the present time, leaf blast is occurring in one place after another throughout the province, and in Hainan, some rice neck blast has appeared. It is predicted that as a result of the rather large amounts of rain with little sunshine, which favors the germination of the fungus spores that cause rice neck blast, that during the late stage of the early rice crop there is likely to be an outbreak of rice neck blast of varying degrees of seriousness.

How can the rice neck blast during the last stage of the early rice crop be controlled? On the basis of experience everywhere, control of rice neck blast requires adherence to a program of "prevention first and comprehensive control," which, in concrete terms, means that the following several measures may be adopted:

1. selection of disease-resistant varieties is both an economic and an effective means of controlling rice neck blast, and it is also at the crux of comprehensive control.
2. strengthen care in cultivation. Most important is the creation of an environment conducive to the growth of the rice but not conducive to outbreak and spread of rice neck blast. Most important at the moment is to give attention to rational application of fertilizer, scientific use of water. Fertilization can promote strengthening of the plants or it can induce disease; water can regulate fertilizer or it can transmit disease.

Therefore, a good job must be done in the rational application of fertilizer and the scientific use of water, bearing in mind the characteristics of different varieties and their susceptibility to disease at different stages of growth, as well to soil and weather factors. During the middle and late stages of growth, there should be no sidedressing with nitrogenous fertilizer, but there should be increased applications of phosphate and potassium fertilizer so that the color of the leaves will turn red rather than yellow during the middle stage. During the late stage, leaves should be green with no withering so as to prevent disease and get high yields. In the use of water, draining and irrigating should be done separately. There should be shallow watering and frequent watering, alternating dryness with moisture and airing and sunning the fields at appropriate times to cut down on ineffective tillering, to improve soil porosity, to toughen the shoots, and improve ability to resist disease.

Additionally, seeds from fields not afflicted with disease should be selected and kept while infected rice straw should be taken care of as soon as possible and used as fuel. If it is used as fertilizer, it should be used only after being fully rotted in order to decrease the source of disease germs.

3. Application of farm chemicals at the right times. It is necessary to diagnose diseases accurately, to decide on the fields where controls should be exercised, and to apply chemicals at the right times. In general, forecasts from the county disease and insect pest monitoring stations on a survey of the fields will permit an estimate of the seriousness of an outbreak of rice neck blast or help determine fields requiring control. Experience in Gaozhou County over the years shows that fields where rice leaf-blast has broken out during the early stage and where there has been pulvinus blast during the latter part of the booting stage, particularly in the case of varieties susceptible to disease and where nitrogenous fertilizer applications have been made, the fields should be designated as targets for control. Chemicals should be applied during the stage when the rice panicles begin to break open, with a second application being given from 4 to 6 days later. In fields where disease is rampant, the chemicals should best be applied once during the late booting stage, once at the onset of heading, and once upon completion of heading. For each mu, use 2 liang of 40 percent Yidaowenjing [8381 4470 4054 0403] or 2 liang of 50 percent daowentai [4470 4054 5148], or 3 liang of 40 percent daowenjing [4470 4054 0403], or 1.5 liang of kewensan [0068 4054 2414], or 1 jin of colloidal sulfur. F h should be mixed with from 120 to 150 jin of water. Spraying as a chemical mist should be done promptly, evenly, and properly to control disease at low cost and to great effect.

MEASURED -- EARLY RICE CULTIVATION UNDER EXCESS RAIN GIVEN

Commentary on Calamities

Guangzhou NANFANG RIBAO in Chinese 14 May 80 p 1

[Text] The provincial government recently issued a notice calling upon all locales to give diligent attention to tending the fields and to gird for battle against all manner of natural calamities to win a bumper harvest from the first crop. The state of the early crop harvest will ramify into whether or not the plan for increased agricultural output can be completed, will ramify into whether the pace of rural prosperity can be quickened, and will ramify into whether initiative can be taken in activities across the board. We hope that party and government units at all echelons will conscientiously analyze their local situations, fortify confidence, and more resolutely persevere in combating calamities to gain a bumper harvest.

Since the advent of spring, calamities have been numerous everywhere in our province. This has been particularly true since the arrival of April when the Leizhou Peninsula and Hainan Island suffered drought, the majority of places had too much rain, and quite a few places were several times struck with torrential downpours with adverse consequences for early crop production. According to meteorological analysis, the amount of rainfall during May and June may well be more than normal, and the amount of rain will be rather concentrated, moreover, with the possibility of serious flooding taking place in the Pearl River basin. We must maintain a high degree of vigilance against the possibility of disastrous weather, and we cannot afford simply to sit back and take it easy. It is necessary to act at once to make preparations to combat calamities, so that when calamity suddenly strikes we will be able to fight and win, reduce the damage to a minimum and be able to increase production despite calamity.

Meriting attention is that some comrades lack sufficient mental preparation to combat calamities and bring in a bumper harvest. They have a psychology of trusting to luck, pinning their hopes on fine weather in the latter stage of growth of the early crop. Still other comrades emphasize only this year's bad climate and its adverse affect on growth of the early crop.

They are unable to see that by giving full attention to caring for the negative factors overcome. As a result they lack adequate confidence that a bumper harvest for the first crop can be brought in. Both of these states of mind are lopsided and consequently incorrect. It must be admitted that even given the current scientific and technical conditions, agricultural production is still at the mercy of the weather to a very large extent. Nevertheless, many years of experience in agriculture demonstrate that given the same conditions of disastrous weather, some places are able to increase output or even greatly increase output, while other places are able only to maintain output or have a great decline in output. This shows that, in the face of disaster, people most certainly are not powerless. It must be realized that preparatory work for the planting of this year's early crop was done well, that fertilizer is quite abundant, that a large amount of "Guichao" superior variety is available, and that most places have kept abreast of the season's advance in doing their farm work. Given these advantageous conditions, determined combat against calamity to bring in a bumper harvest is very hopeful indeed. We must do as old farmers and agricultural technicians in Nanhai County said, both figuring out what adverse effects the bad weather will have on early crop production and then, on the basis of the complexities of changes in the weather, adopt a positive attitude and effective measures to intensify care of the early crop, go after the beneficial while avoiding the harmful, change adversity into advantage, and transform passivity into initiative. Though seedling growth during the early period has been far from ideal, only by meticulous tending of the fields can a radical change in the existing state of affairs be brought about during the later stage, and success be fully assured.

Of all the measures that can be taken to make a reality of combat against calamity to bring in a bumper harvest, most important are continued implementation of the policies of the party, and further mustering of the enthusiasm of the broad masses of the peasantry. Ever since the Third Plenum of the 11th Party Central Committee, numerous prefectures in our province have taken their local situation as they found it, and adjusted methods to local circumstances to build systems of responsibility for production of various kinds. Quite a few prefectures have had notable success with the institution of a system of responsibility that contracts work down to the team level, linking output to remuneration. Some places have instituted a system of personal responsibility for agronomists, which has played a very important role in the promotion of scientific farming and in putting into effect various measures to increase output. In other places individuals have been made responsible for tending a designated plot of land during the crop tending season, and their output is compared with the output of others on other plots of land, with remuneration being made accordingly.

Some places have instituted flexible measures to promote production in out-of-the-way mountain fields in sinkholes, or from low yield fields. Experience has proven that adoption of these methods has brought rather good economic results. The systems of responsibility for production that have already been established need both constant improvement and consolidation.

They should not be changed capriciously, because every effort should be bent to doing a good job in early crop production. In addition, the system of personal responsibility for early warning to prevent floods and flooding, plant diseases, and insect pests requires further perfecting and completion in order to designate responsibility clearly and assure victory in the struggle against calamities.

Combat against calamities to bring in a bumper harvest is the joint responsibility of every battle line and of every sector. Every echelon of party and government organizations should strengthen their leadership and organize all units concerned to turn in a good performance on this task in support of agricultural production. Electric power, petroleum used as fuel and machine oil, chemical fertilizer, agricultural chemicals, and equipment used to prevent flooding must be given priority use in assuring a good job of meeting the needs of early crop production and to guarantee smooth progress in the struggle to combat calamity and bring in a bumper harvest.

Nanhai County Experience

Guangzhou NANFANG RIBAO in Chinese 14 May 80 p 1

[Text] Recently the Production Office of the Provincial Agriculture Department and the Nanhai County Agriculture Bureau invited more than 10 old farmers, brigade leaders from high production brigades, and agricultural technicians with abundant production experience from the Dali, Pingzhou, and Yanbu communes in Nanhai County as well as from outside the local area to conduct an onsite dissection and analysis of the early rice crop production situation and, in light of the special character and problems currently obtaining in field care, to make suggestions as to how to intensify early crop field care.

On the basis of an inspection and analysis of the fields, the predictions of meteorological units, and the experiences of old farmers, everybody acknowledged that the first half of this year, with its uncommonly heavy rainfall, has brought low soil temperatures, high water tables, the rotting of the roots of grain seedlings, uneven tillering and such maladies. Given these conditions, the slightest inattention could result in a low rate of heading, a low rate of fruiting, a drop in grain weight, or even outbreaks of disease, lodging, and the creation of heavy losses.

A look at the situation from several places in Nanhai County shows that four different situations currently exist with regard to the seedlings: adequate seedlings with adequate color, some seedlings with inadequate color, adequate color but inadequate seedlings, and inadequate color and inadequate seedlings. The two first cases total only about 40 percent. Therefore, the tending of the fields must be done more meticulously and more solidly. A mentality of combating calamity to bring in a bumper harvest must be established, and there must be a separate forming of the ranks to strengthen the roots, preserve tillering, control disease, and control lodging.

Intensive and meticulous care must be given so that a foundation will be laid for problem-free reddening during the middle stage of growth, and fullest use made of the potential of the grains in the heads for increased output during the late stage.

Comrades participating in the discussion group maintained that long airing of the fields was most important and that repeated light sunnings were also especially important links in the tending of early crop fields in years of great rainfall. No matter the kinds of seedlings, excessive water had to be drained from the fields. Airing of the fields was most important, combined with light sunnings so that the seedlings would have a rather long opportunity to toughen up before the height of torrential rains. Airing and sunning of the fields was particularly important in the case of "Guichao" with its quite low resistance to disease. Only after the fields were aired would the soil temperature rise, the amount of oxygen in it increase, and the toxins in it be eliminated, so that the root system would be able to maintain a vigorous absorption capacity. This would be outstandingly effective in its effects on the vitality of the seedling roots, and in increasing the area for photosynthesis to produce nutrients for rice, wheat, and millet. Additionally, the sluices must be frequently cleared and deepened, and the drainage openings lowered so that flood waters can rapidly drain from the fields following rains.

Comrades participating in the discussion felt, as regards application of fertilizer, that consistency was most important and that fertilizer should be added judiciously. Because of the weather, the young heads of medium and late maturing varieties that were planted early are beginning to divide, but most have not turned red. For rice transplanted at the right time or transplanted late, tillering was not vigorous during the period when tillering is supposed to be vigorous, and the high point of tillering was not high. A good opportunity to get a sufficient number of shoots early was lost. A rather large amount of leftover fertilizer remains in the bottoms of the fields, so injudicious use of fertilizer may lead to a bolting in plant growth with the production of fine plants but no fine grain. Therefore, measures to care for the fields must begin with airing and sunning the soil, concentrating on putting to use the leftover fertilizer in the bottom of the fields, and giving attention to application of potash and phosphorous fertilizer. Application of fertilizer should be halted for plants with an adequate number of shoots and an adequate color. Weak seedlings may be given applications of an adequate amount of lime or black and white ashes [3500], which will both put to use the leftover fertilizer in the bottom of the fields and increase the plants' resistance to disease. Where shoots are really inadequate, the tactic of eating less and having more meals may be used, mixing organic fertilizer with inorganic fertilizer. This may best be done by adding nitrogenous, potash and phosphorous chemical fertilizer to manure dissolved in water so that the plants will get enough nourishment without getting too much nitrogen. During periods of a lot of rain, it is important during the early stage of growth to combine application of fertilizer with cultivation to increase the effectiveness of the fertilizer and prevent runoff.

In addition, disease prevention work must be taken in hand. At the present time some of the grain seedlings have already had outbreaks of sheath and culm blight and some bacterial blight and leaf blast. In fields where large amounts of chemical fertilizer have been applied, diseases are particularly noticeable. This shows that the causes of disease are latent and will break out at the slightest inattention. To prevent this, aside from conscientious and careful attention to draining away water and airing and sunning the fields, and rational use of fertilizer, during the high point of tillering and from the "beginning of summer" [earliest May] until the "filling of the grain" [late May], chemicals must be widely applied for prevention. Such chemicals include "tianan" [3944 1344], or lime, black and white ashes, or heibaihuang [7815 4101 7806]. Attention must also be given the prevention of the second generation of paddy borers.

9432

CSO: 4007

MEASURES TO STRENGTHEN EARLY RICE MANAGEMENT DISCUSSED

Strengthening Management of Early Rice Fields

Guangzhou NANFANG RIBAO in Chinese 30 Apr 80 p 2

[Article From Grain and Oil Section, Production Department, Provincial Agriculture Bureau: "How Can Management of Early Rice Fields Be Strengthened?"]

[Text:] The weather in most parts of our province this year has been much the same as in past years that have had warm springs. A look at the past record shows that if there is a slight slackening in attention in the care given early rice fields during years with warm springtimes, reduced output may easily result. On the other hand, since temperatures are fairly high during warm springtimes, few seedlings rot or die and they green up very quickly following transplanting. After considering the advantages and disadvantages of warm years, attention to doing a good job in the following ways seems necessary.

Need for close attention to top dressings of fertilizer to promote tillering and robust young plants. In view of the weather and the greater availability this year of nitrogenous and potash chemical fertilizers, the method of early application of top dressing followed by additional individual applications should be followed to promote early tillering and growth of robust young plants. But early applications should not be overdone; otherwise the young plants will grow out of control. During the middle stage of growth, generally restraint in the use of fertilizer for the maintenance of plant color is paramount; if a premature fading of red occurs, appropriate supplemental feedings of fertilizer may be made. During the final stage of growth, it is necessary to watch the heavens, watch the land, and watch the situation with the plants. Watering with fertilizer should be done to strengthen the panicles and the grain. During the mid to late period of vegetative growth as ripening is taking place, when, for example, there may be quite a bit of light during the late stage, proper application of fertilizer can increase grain weight.

Need for early airing, early sunning, long airing, light sunning. The heavy rains of May and June are very bad for the growth, flowering, and fruiting of rice. In order to improve plant resistance to pestilences and reduce damage

from diseases and insect pests, it is necessary, in addition to using fertilizer sensibly, to have a good grasp of the scientific way to use water. During the early stage of growth, usually shallow water is required in the fields so that transplanted seedlings will green up and tillering will be promoted, with attention going to early airing of the soil and early sunning of the soil. Airing should be done for a long time, but sunning should be done lightly with proper ventilation and light conditions being provided for the fields as well as reduced moisture. When the planned number of panicles have been formed, which should be prior to the rainy season at the "onset of summer" (earliest May), the water covering should be removed from the fields, and they should be sunned so that the plants will toughen and their resistance to pestilence be increased. During the middle period of growth, long airing of the soil is paramount with control of water and a halt to fertilizer applications being combined. This is beneficial to the accumulation of nutrients in the plant and the growth of the young heads, creating conditions for resistance to diseases and insect pests, and increasing the number of mature heads. During a period of long airing, fields should be sunned until tiny cracks appear in the soil. When dry, attention should be given to irrigation with "running water." During the late period, the surface of the fields should be kept moist until harvest time. Ripening will not occur until mid-July, and since the sun is fierce, care should be given to use of water to regulate temperatures and aid transpiration so that the rice will plump with milk. In addition, it is necessary to do a combination of cultivating between rows, digging surface ditches in the fields, and clearing sluices so that flood waters may be rapidly cleared from the fields during the rainy season.

Need for strengthening of prevention and control of damage from disease and insect pests. If field care is not properly done during years with warm springtimes, diseases and insect pests are apt to occur during the middle and late periods of growth. This has been a lesson of history. Therefore, plant protection work has to be enhanced with meticulous monitoring and warning, and meticulous checking being done so that the diseases and pests may be stamped out definitely and decisively. In areas of high yields, in coastal areas where typhoon damage occurs and in cold bottom lands, in fields subject to flooding, and in areas where disease has broken out historically, when tillering is at its height, during the booting stage and the period of panicle formation, before the torrential rains reach a zenith, it is particularly necessary to give attention to preventive measures against diseases and insect pests.

Use of Herbicides in Rice Fields

Guangzhou NANFANG RIBAO in Chinese 10 Apr 80 p 2

[Article by Lai Guicheng (6351 2710 3397): "How Should Herbicides Be Used In Rice Fields?"]

[Text:] Attention should be given the following points when using chemical herbicides on rice fields:

1. Select the proper herbicide. Different herbicides have different properties and uses. For example, in the Pearl River Delta region, the weeds that most damage paddy rice are nutgrass flatsedge, *sagittaria sagittifolia*, barnyard grass, and tianzicao [3944 1316 5430]. Either "chucaomi" [7110 5430 5721] or "daocaowan" [4470 5430 1346] may be used against these weeds, and if the two are mixed together for application, results are even better.

2. Application at the right time and in the right amounts. Generally speaking, chemical herbicides are most effective when applied from 5 to 7 days after seedlings have been transplanted. When air temperature is below 20°C, the amount of chemical should be appropriately increased. When air temperature is higher than 20°C, the amount of chemical should be appropriately decreased. When either "chucaomi" or "daocaowan" are used separately on paddy fields, usually the proper amount is 8 shiliang per mu. When the two chemicals are mixed together, 4 shiliang of each per mu is suitable. At the time of application, they should be mixed thoroughly with either moist fine soil or damp silt (50 jin per mu) and then sprayed. In some places, after the herbicide has been mixed with fine soil, it is covered with plastic sheeting and allowed to interact for 5 to 7 hours after which it is sprayed with better effect.

3. Attention to environmental conditions at the time of spraying. Herbicides have the property of not becoming toxic until exposed to light; therefore, a clear warm day should be selected with application being made only after the dew has dried. At the time of application and for 5 days following application of the chemical, 1 shicun or so of water should be maintained on the surface of the paddy.

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C30: 4007

XINGNING COUNTY DEVELOPS EXPERIMENTAL EARLY RICE FIELDS

Guangzhou NANFANG RIBAO in Chinese 4 May 80 p 2

[Article by Wei Qingquan [7614 3237 3123] and Liao Qixin [1675 0796 2450]: "Constant Exploration of Experiences With High Rice Yields; Xingning County Launches Experimental Activity With 300 Mu of Early Rice to Produce Per Mu Yields of 1500 Jin"]

[Text] Xingning County with the highest per unit rice yields in our province, this year launched an experimental campaign with 300 mu of early rice to try to produce yields of 1,500 jin per mu. This research project, which was under the direct control of the County CCP Committee leadership and participated in by 20 production teams, used "Guichao No 2" entirely. Current growth of plants is universally good.

By way of accelerating growth of agricultural production and creating experience with high rice yields, the Xingning County CCP Committee last winter set up a 300 mu continuous area of early rice in an experimental project to produce 1,500 jin per mu. Xingning County has a large number of people on a scant amount of land. Members of the leadership of the County CCP Committee, and cadres and agricultural technicians from communes and brigades that participated in the experiment held joint analysis and discussion. Following analysis and summarization of experiences, everybody was more confident, and on this basis, cadres from communes and brigades participating in the research experiment and technicians from each unit concerned jointly determined the various technical measures involved in the high yield experiment.

In order to make the goals of the high yield research experiment become a reality, both the Xingning County CCP Committee and the County Agriculture Bureau, closely followed every link in the experiment, while at the same time rendering vigorous support in material and technical forces. On 20 April, the County CCP Committee and the County Agriculture Bureau organized the more than 40 leaders and specialized agricultural cadres participating in the research experiment to make a mu by mu inspection of the 300 mu of experimental fields, and carry out an analysis of the fields. They were of the general opinion that the 300 mu of experimental

fields had been meticulously prepared, that their basic fertility was sufficient, that the initiative had been gained in early sowing, early transplanting of seedlings, and early care of the fields, and that the seedlings were in much better shape than in most fields. Still there were quite a few problems in the drainage of water, sunning of the fields, and the prevention and control of insect pests and diseases; thus prompt study should be given to measures to solve these problems. Now they have even greater confidence in the high yield experiments.

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CSO: 4007

FERTILIZER NEEDS OF 'GUICHAO' RICE DISCUSSED

Guangzhou NANFANG RIBAO in Chinese 18 Apr 80 p 2

[Article by Revolutionary Committee of Huashan Commune, Hua County: "Scientific Use of Fertilizer for Good Growth of 'Guichao'"]

[Text] Our commune is located in a semi-hilly prefecture where the layer of topsoil is thin and where the total area planted to rice amounts to 53,000 mu. In 1977, when our commune began test plantings of "Guichao No 2" as the late crop on 5 mu of land, we had a successful harvest. In 1978, cultivation of "Guichao" as both an early and a late crop was extended over a large area amounting to 40 percent of the total area planted to rice, and output for the entire year rose by more than 6.5 million jin of paddy. The 1979 planting of "Guichao" as an early crop occupied 70 percent of the planted area, and increased output again resulted, with the average increase for the early crop being 101 jin per mu more than for the previous year. Both total annual output and per unit yields exceeded the highest levels in history.

The reason we have been able to achieve steady increases in output from the cultivation of "Guichao" during the past several years is not only our diligent implementation of various economic policies for rural villages and gradual readjustment of the pattern of our production, but also due, in very important ways, to the promotion of superior varieties and scientific farming techniques. In this article, emphasis will be placed on a discussion of the problems of how to use water and fertilizer scientifically for good growth of "Guichao."

We have learned from experience that in the use of fertilizer there are three links that must be fully grasped. The first such link is application of fertilizer at the right time. When applying a topdressing of fertilizer within 10 to 15 days after the seedlings have been transplanted, "don't try to overwhelm," so as to prevent a bolting in growth of the plants, premature closing of the rows leading to disease and insect damage, and creating low resistance to pestilence during the middle and late stages of growth with impairment to output. The middle stage of growth is from the 20th to the 60th day. Because the soil in our commune is worn out, we work on the principle of "repairing the tattered garment" and giving slight amounts of good

given in numerous feedings, applying phosphorus, potassium, and nitrogen fertilizers at different stages of growth and according to different rates of growth so that the leaves green normally and the stalks are sturdy, to lay a foundation for the reduction of outbreaks of disease and insect pests, increased resistance to pestilences, improved fruiting rate, and increased per thousand weight of grains. During the latter stage of vegetative growth, which is around the time of panicle formation, attention is given to an application of sidedressing to promote panicle formation, and an application of foliage fertilizer plus another dressing of fertilizer to promote grain formation in the rice ears. The Yongle Brigade has obtained excellent results from keeping up dressings of fertilizer to promote grain formation over a period of 5 years. Between 15 and 20 days prior to harvesting, they apply from 3 to 5 jin per mu of urea, and at harvest time the ears of grain are golden yellow and firm. They get 20 to 30 jin more paddy per mu than from fields to which this grain formation fertilizer has not been applied.

The second link is attention to application of nitrogen, phosphate, and potassium fertilizers in proper proportions. In the past we cared only about nitrogen fertilizer, ignoring proportional applications of potassium and potash. As a result leaves grew long but stems did not, and there was a lot of growth in the early stages with premature degeneration in the final stage. Fullest benefits could not be derived from the "Guichao" long heads and large grains heterosis. During the past few years we have given attention to providing phosphorous, potassium, and nitrogen in sensible proportions. Generally, for the first crop nitrogen was applied at the rate of 45 jin per mu, and phosphorous at the rate of 80 jin per mu. For barren fields nitrogen application was 70 to 80 jin per mu, and phosphorous 100 to 120 jin per mu. These applications produced quite good results in increased setting of grain and increased per thousand weight of grain. Experimental results with the early crop last year at seven places and commune farm research stations showed that the grain setting rate was from 85 to 92 percent, and the weight per thousand grains was from 25.5 grams to 26 grams. By contrast, when much nitrogen fertilizer was applied but phosphate and potassium were held back, the grain setting rate was generally only from 82 to 84 percent, and the weight per thousand grains was only 22.1 to 23.3 grams.

The third link is the outstanding results in increased yields obtained from increased applications of pig manure and potash and phosphorous fertilizers to lowlying fields and cold bottom lands along mountains where the water table is high. For the early crop in 1978, more than 20 days following transplanting of the more than 4000 mu of "Guichao" throughout the commune, red leaf blight broke out and the plants grew no new roots. Later on, farm scientists, old farmers and cadres from Qing County went into the fields to analyze the reasons for the outbreak of disease. They decided that applications of 60 to 70 jin per mu of potash and potassium, 20 to 30 jin of plant ashes, plus drainage of water and airing of the fields would rapidly bring the plants out of danger, eradicate the disease and bring normal growth. The harvest brought varying degrees of increased yields.

Hand in hand with control over scientific use of fertilizer should be control over scientific use of water with a combination of shallow water covering the fields and simply moist fields during the early stage to promote early tillering of the plants. During the middle stage, there should be moist fields alternated with sunning of the fields to make the stems and leaves strong. During the final stage, there should be moist fields with long periods of airing to make the plants have green branches and waxy stems. From 3 to 5 days before harvest, there should be a watering with fertilizer to form up the grains. Results will be good from this procedure. We are determined that there shall be constant improvement in this year's early crop, with further improvement in the level of scientific management to make steady increases in output from "Guichao."

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CSO: 4007

MORE ON MANAGEMENT OF 'GUICHAO' RICE GIVEN

Provincial Agricultural Bureau Comments

Guangzhou NANFANG RIBAO in Chinese 4 May 80 p 2

[Text] Comrade Editor:

About 10 million mu of "Guichao" has been planted this year as an early rice crop in our province. Another 20 million mu has been planted with other than "Guichao."

"Guichao" requires large amounts of fertilizer and a high degree of fertilizer and water care, so most areas make arrangements to plant it in quite fertile paddy fields. The remaining 20 million mu of paddy rice is grown, for the most part, in ordinary paddy fields or in low yield fields. There has to be diligent care and implementation of measures to increase yields in this portion of the paddy fields.

At the moment, most important is a good job of preventing and controlling diseases and insect pests. Recently due to torrential rains, diseases and insect pests can easily develop and spread. Therefore, early crop paddy fields that have been inundated should be drained and farm chemicals applied as soon as the weather has cleared. After the fields have been exposed but before they are dry, a mixture of plant ash, 10 jin of lime and half a jin of sulfur should be spread per mu.

Similar attention should be given to drainage of excess water and spraying of chemicals during clear weather against bacterial blight and blast of rice. Additionally, attention must be given to prevention and control of rice thrips, and rice stem borers. There should be reasonable application of fertilizer and water, and during the mid-season of growth, in particular, digging of drainage ditches, exposing and sunning of the fields should be done as a very important matter. Secondly, chemicals should be applied in accordance with differences in soil type to control diseases. Of the 15 million mu of low yield fields in our province, most may be divided into two types. One type includes fields afflicted with coldness, wetness, or toxicity. This includes cold waterlogged fields, waterlogged

fields, and marshy fields. These fields have a high water table, and low soil temperatures, which usually leads to slow greening of the rice, no tillering, and possibly blackened roots and dead seedlings. The other type is excessively sandy and barren fields with a poor soil structure and poor water retention, fertilizer retention, or low fertility properties. In the case of the first type of soil, a combination of field care with the digging of deep ditches to drain away toxic water and lower the water table is necessary, followed by applications of limestone and phosphate fertilizer, according to the actual situation, to increase the vitality of the root systems.

After these measures were taken on 90 mu of lake and ocean fields for last year's early crop at the Yuqian Brigade of Youtian Commune in Wuhua County, per mu yields increased by 295 jin over the same period the previous year. For the second type of field it is necessary to make increased applications of organic fertilizer and of phosphate and potassium fertilizer during the mid-period of rice growth in frequent but small amounts. Experience has shown that increased yields can also be outstanding if this is done.

The various fields and seedling beds from which rice has been harvested lack potassium, which makes for easy infection with red wilt disease. For this there should be applications of phosphorous fertilizer in addition to applications of organic fertilizer.

Jieyang County Experience

Guangzhou NANFANG RIBAO in Chinese 28 Apr 80 p 1

[Text] Once transplantation of seedlings for the early rice crop had been virtually completed in Jieyang County, mindful of the growth characteristics of the locally predominant variety, "Guichao," particularly its earliness, care of the fields was firmly taken in hand. Now, of the more than 400,000 mu of early rice throughout the county, more than half has already had one top dressing of fertilizer, and some have had two. Work has also begun on digging of ditches to drain away water to air the fields, and the plants are growing very well.

This year, "Guichao" has been planted as the early crop in Jieyang County on more than 330,000 mu, which is 80 percent of the early crop area. So that the "Guichao" would be properly cared for, the county convened a discussion group for high yield communes and brigades to summarize the experiences of several brigades who planted two crops of "Guichao" in a single year that produced per mu yields of more than 1000 jin. They decided that emphasis on the early crop this year would center on three key links. First would be an early and heavy feeding of fertilizer during the early stage of growth. In addition to the application of sufficient basic fertilizer, they would make an application of tillering fertilizer from 7 to 10 days following transplanting the seedlings and in conjunction with cultivation between the rows. From 15 to 18 days following transplanting,

they would make an application of fertilizer to strengthen the tillers. They would change their method of doing this from first applying soil and manure of various origins followed by application of chemical fertilizer to application of quick acting chemical fertilizer followed by soil and manure of various origins so that the plants would have sufficient nutriment from the very beginning, and so as to avoid an excessive concentration of fertilizer during the middle stage of growth with attendant spurting of plant growth. Since the soil generally lacked potassium, each commune and brigade would actively collect potassium fertilizer, even while applying tillering fertilizer, in preparation for applying it at the time of kernel formation. Second was early airing of the fields to mature the crop. "Guichao" requires shallow water for tillering, open fields for tillering, and sunning of the fields for maturing of the crop, moisture for nuturing panicles, shallow water for formation of panicles, and moisture for ripening. Early airing and sunning of the fields is a key link in scientific use of water. Usually the fields are aired within 15 to 20 days following transplantation of seedlings with sunning beginning on the 25th day. That is to say, once tillering has reached the planned number of panicles, a combination of cessation of fertilization and prompt airing of the fields causes the color in the leaves of the seedlings to pale with a fading of redness. This both controls production of ineffective tillers, allows air and light to reach the paddies, and promotes the spread and deepening of roots, firming of stalks, and an increase in resistance to disease and insect pests. Heavy sunning of the fields is not advisable. Third is prompt control and prevention of disease and insect pests. They paid closest attention to prevention and control of sheath and culm blight, and to bacterial blight. Before transplanting seedlings, the entire country dilligently worked to rid the fields of insect pests and diseases. Following transplanting, each commune and brigade perfected its corps for monitoring and reporting disease and insect outbreaks. At the very first sign, chemicals were used at once. While giving attention to the above three links, the entire county actively spread the use of herbicides, with the area to which weed killer was applied amounting to 120,000 mu.

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CSO: 4007

BRIEFS

PROMOTION FOR RICE BREEDER--A technician in the Fengkai County Bureau of Agriculture who made outstanding achievements in paddy rice breeding, Zhang Qingzhi [1728 1987 2535], was recently promoted to deputy chief of the Fengkai County Bureau of Agriculture. Zhang Qingzhi graduated in 1958 from the agricultural department of the Huanan Agricultural Academy. For the past 22 years he has persevered in rice breeding work, breeding 10 new varieties of paddy rice including "Fengfengzhan," and "Fengaizao," each of which has well shaped plants, and tough stalks, tolerates fertilizer, resists lodging and produces high yields. Some varieties have been widely planted with very good results by communes and brigades in numerous mountain areas of Zhaoqing Prefecture. Recently Zhang Qingzhi was hailed as an advanced worker in prefectural and county agricultural research. Recently he was promoted to deputy chief of the County Bureau of Agriculture. Agriculture Bureau technician Xing Yinan [6717 6318 0589] was recently promoted to deputy chief of the Bureau of Agriculture. Following his graduation in 1957 from agriculture school, he was assigned to work in Baoting County. For a long period of time he assiduously engaged in self study of agricultural technology to get a quite good grasp of the physiological and ecological characteristics of crops such as paddy rice and sweet potatoes. At the same time, he frequently went into the villages of the Li people and the towns of the Miao for investigation and study, summarizing the practical experiences of the masses and gradually coming to understand the local prefecture's climate, soil, and water resources, as well as the internal structure of agriculture, and changes in the system of farming. Consequently, he was able to make sensible suggestions to the CCP Committee promptly with the agricultural production task for each season firmly in mind thus becoming a good staff officer who played a definite role in giving impetus to the development of agricultural production throughout the county. Xing Yinan has a deep respect for science, and he is not one to do something just because leaders direct that it be done. He has helped the leadership prevent some "blind direction." Following his promotion to deputy chief of the Bureau of Agriculture, he said, "It is because people in the know are wanted to lead production." [Text] [Guangzhou NANFANG RIBAO in Chinese 15 May 80 p 1] 9432

EARLY RICE, DISEASE, INSECTS--At present the intermediate and late maturing varieties of early rice in Guangdong are entering the booting and heading stages. Now is also the peak hatching period for the larva of the second generation yellow rice borers and third generation rice leaf rollers. Rice sheath and culm blight is spreading everywhere while white withering and rice neck blast have already broken out. These insect pests and diseases could severely affect the yields of early rice. Proper measures must be taken to counter these threats. [Guangzhou NANFANG RIBAO in Chinese 13 Jun 80 p 2] Many areas this year planted such rice varieties as "Guichao," "Qingerai" and "Guanger" as the early rice crop. Because these varieties are susceptible to disease damage, attention must be paid to the prevention and control of such diseases as mentioned above. [Guangzhou NANFANG RIBAO in Chinese 8 Jun 80 p 1]

FUSHAN POND FISH PRODUCTION--Article by Ma Shiqin [7456 0099 2953]--The various fish producing counties of Fushan District have started to urge the masses to adopt measures to restore pond fish production. Fushan District is the major commercial pond fish producing base in Guangdong. The cold wave last spring killed more than 80 percent of Lingyu [a kind of dace; *Manis pentadactyla*] amounting to one-third of the pond fish production. Following the disaster, the district and county party leaders organized persons to go to the communes and brigades to carry out a timely survey of the condition and to help resolve the actual difficulties. In Shunde County aside from adopting the method of using Jiyu [*Carassius auratus*] to make up some of the loss and providing money to compensate the loss in yield, the ratio of the culture method was adjusted to raise the yield of the unit area. The concrete measures are as follows: (1) Raise Wan [Grass Carp; *Ctenopharyngodon idellus* (C. & V.)] as the key crop and increase the feed to require the yield per mu this year to be 15 to 25 jin higher than that of last year. (2) Increase the number of other species to practice the technique of raising more Yongyu [*Aristichthys nobilis* (Richardson)] in the summer and autumn and more Bianyu [*Parabramis Pekinensis* (Basil)] in the winter and spring while at the same time raising Liyu [Carp; *Cyprinus carpio* L.] and Northeast Jiyu as accompanying species. (3) With respect to the surviving Lingyu, a method of getting rid of the poor ones and labeling the big ones should be adopted to cause them to grow longer and bigger faster. (4) Select the fertile ponds near the villages to raise a large quantity of African Jiyu to increase the yield. At present, the county has purchased 12,000 jin of African Jiyu fingerlings, which are estimated to grow to about 40,000 tan with feeding. While adjusting the ratio of fish species, the various areas are also to do a good job of hatching fingerlings and breeding work. The Jiujiang Commune of Nanhai County has produced 2,500,000 Liyu fingerlings, 450,000 Silver Jiyu fingerlings, and 40,000 Wanyu fingerlings through artificial hatching. At the same time, the commune's ponds have already been stocked with 30 to 40 Bianyu fingerlings. For the purpose of raising the fish well, the commune has made arrangements to have members cut the grass every day. On the average, 15 jin of fresh grass per mu is maintained in all fish ponds. Furthermore, 500,000 jin of corn meal has been allotted from the granary in addition to the 2 million jin of feed. The problem of the need of fine feed to raise Wanyu this year has been basically resolved. In the

process of reviving the pond fish production, various forms of production responsibility systems have been extended to all the areas to encourage positiveness in the members. For the 20 percent low yield ponds in Shunde County, the system of yield quota per pond is adopted to assign jobs to individuals and to give prizes for above quota yield in order to promote the pond fish production. [Text] [Guangzhou NANFANG RIBAO in Chinese 29 Apr 70 p 1] 6168

FIRST QUARTER TIMBER OUTPUT--Guangdong Province has completed this year's first season lumber production responsibility 12.8 percent above quota. There is an increase of 22.4 percent of lumber production above the quantity of production last year. Based upon the schedule of "chopping firewood in autumn and winter and transporting it in the spring and summer" the Shaoguan District had cut 486,000 m³ of lumber by the end of March and 35 percent of that quantity had been delivered to the state's lumber storage sites. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 14 Apr 80 p 3] 6168

MAN-MADE FEED FOR CASTOR SILKWORMS--A new way of using man-made feed to raise castor silkworms has been successfully tested by the Plant Protection Institute of the Guangdong Provincial Agricultural Academy. Castor silkworms are also able to eat cassava leaves, so they are called cassava silkworms in south China. The eggs of the castor silkworm are a superb host for the nurturing of trichogramma, and the trichogramma are a mortal enemy of some insects that damage crops and the forests. In order to expand use of trichogramma in controlling insects, vigorous growth of castor silkworms is required. In numerous prefectures, however, the seasonal limitations on castor leaves and cassava leaves makes it impossible to satisfy needs for the development of the castor silkworm. As a result, researchers concerned with biological control in the Plant Protection Institute of the Guangdong Provincial Agricultural Academy worked together with concerned units last year to find a man-made food prescription to take the place of dry cassava leaves, powdered cassava, powdered yellow beans, wheat bran and such agricultural sideline products. After steady experimentation, the survival rate, the cocoon layering rate, and the quantity of silk moth eggs produced was virtually the same as for castor silkworms provided with fresh cassava leaves as feed, and costs of feeding were also about the same. Now the results of these experiments are being promoted throughout Guangdong Province. [Text] [Beijing RENMIN RIBAO in Chinese 29 Apr 80] 9432

CHENGHAI COUNTY RODENT KILL--Every brigade and production team in Guangdong's Chenghai County has carried out measures to catch and kill voles [which cause serious crop damage]. Each day more than 10,000 people throughout the county are engaged in the activity. In almost 1 month, more than 310,000 voles have been killed. [Guangzhou NANFANG RIBAO in Chinese 30 Jun 80 p 1]

FRESH FRUIT OUTPUT--The total amount of fresh fruit produced in Guangdong at present is only about 6 million dan, a long way from reaching the historical high. [Guangzhou NANFANG RIBAO in Chinese 20 Jun 80 p 1]

ROSIN OUTPUT FOR 1979--The man who for many years has been judged a crackerjack rosin tapper on the rosin production battle line in our province, Zhou Liuxing [0719 2692 5281], a rosin tapper in the Hongqi Rosin Plant in Baisha County, last year created a new record to cap his 13 year long record of an annual output of 10,000 jin of rosin. In 1978, following his transfer to a low producing stretch of forest where annual output of rosin was no more than 3,476 jin, Zhou Liuxing diligently studied the reasons for the low production from this stretch of forest and took appropriate steps to correct it. In the following year, rosin production from this stretch of forest suddenly increased to 14,545 jin for a more than doubling of production over the year before. Following the Third Plenum of the 11th Party Central Committee, Zhou Liuxing's zeal was even greater. Last year he created a new record by producing 27,577 jin of rosin. This year he fulfilled rosin production quotas for the first quarter of the year by achieving a 71 percent overfulfillment of quota. [Text] [Guangzhou NANFANG RIBAO in Chinese 17 May 80 p 1] 9432

EXCESSIVE RAIN IN SHAOGUAN--As part of the care of fields of early rice in Shaoguan Prefecture, emphasis is being placed on the digging of ditches to reduce the water table and to the sunning of fields in view of the excessive rainfall during the period just past, the low ground temperatures, and the high water table. In many places there is also an extension of deep application of fertilizer to promote sturdy growth of grain seedlings. In Shaoguan Prefecture this year, there has been rather heavy planting of the superior varieties, "Guichao," and "Zayou," and applications of fertilizer have also been greater than formerly. However, owing to the large amount of rainfall during April and May, the lack of sunshine, the high water table in the fields, and the great humidity, unless prompt action is taken to dig drainage ditches and sun the fields, the grain seedlings may bolt in their growth, which could lead to lodging, which could also expose them to the spread of diseases and insect pests. Therefore, mindful of the special nature of field care this year, every area is emphasizing the digging of drainage ditches, and sunning of the fields. As of 3 June, drainage ditches had been dug on 980,000 mu of fields throughout the prefecture, and 2.29 million mu had been sunned, amounting to almost 80 percent of the early rice crop area. [Text] [Guangzhou NANFANG RIBAO in Chinese 7 Jun 80 p 1] 9432

AGRICULTURAL ACHIEVEMENTS POPULARIZED

Beijing GUANGMING RIBAO in Chinese 2 May 80 p 2

[Article by Guo Qing [5753 7230]: "Guizhou Popularized Agricultural Scientific and Technological Achievements"]

[Text] The Guizhou Provincial Science and Technology Committee recently made recommendations regarding a number of achievements in agricultural science. They requested that each prefecture, autonomous prefecture, municipality and county immediately make contact with the concerned units in order to make selections and organize large-scale popularization according to local natural conditions and actual situations and by suiting measures to the locale and the season.

There are 34 agricultural science achievements to be popularized, all of which underwent testing and proof in the past few years to establish the accuracy of the economic benefits. Except for a few items which were imported from outside Guizhou and tested for popularization here, the great majority of these achievements were produced by scientists of this province. The six varieties of hybrid rice recommended were combined varieties introduced from outside the province. Last year these types were planted in 1.24 million mu and produced an average increase of over 200 jin per mu. The indica variety of paddy rice gengxiang zhonggan [1649 3276 0022 4427] developed by the Provincial Academy of Agricultural Sciences has per mu production 200-300 jin higher than most ordinary varieties. This variety as well as another indica variety developed by this academy, Guangwen No 5, have already become the prime paddy rice varieties in Guizhou province and recently were exchanged during the National Convention for the Popularization and Exchange of Achievements in Agricultural Science.

The technicians of the Guizhou Provincial Chemical Engineering Research Institute and the Zunyi Alkali Plant developed an agricultural pesticide which is highly effective but of low toxicity. It has broad range effectiveness, good preventive results, is safe for man and beast, and not harmful to the crops.

It is over 90 percent effective on such pests as rice paddy striped rice borer, yellow rice borer, rice plant skipper and rice borer, and it is also quite effective against some other farm crop pests. These research achievements have already been broadly popularized throughout over 10 provinces and autonomous regions including Jiangsu and Hunan.

11582
CSO: 4007

BRIEFS

RARE VARIETIES OF XIAN--Your correspondent has recently learned from the department responsible for the work that following a general search for varietal resources for farm crops, Guizhou has discovered some rare and valuable varieties as well as inner fringe wild plants of which the most outstanding are "sankecun," a high protein white xian white, and a fragrant glutinous rice. The per thousand grain weight of "Sankecun" xian rice is 52.6 grams, the heaviest per thousand grain variety of xian rice found in Guizhou Province to date. In the two newly discovered high protein white xian varieties, protein content amounts to 15.99 and 15.45 percent respectively. The scientific research departments concerned say that such a high protein content is a rarity in China. The fragrant glutinous rice produced by the Miao and Tong peoples who reside in the mountains and river valleys of Congjiang County has a particularly fine texture. Cooked rice prepared from this grain is aromatic and tasty. It is praised locally with the saying, "when one family steams rice, 10 families smell it." [Text] [Beijing RENMIN RIBAO in Chinese 29 Apr 80 p 2] 9432

CSO: 4007

NEW METHOD FOR DETERMINING SEED VIABILITY FOUND

Beijing RENMIN RIBAO in Chinese 16 Apr 80 p 4

[Article by He Ke [0149 4430]: "A New Technique For Determining Seed Viability Quickly"]

[Text] Gauging the viability of crop seeds is an important technique in seed care and improvement of the quality of seeds that are sown. In the past, the sprouting method was usually used. With this method, it took a certain temperature and moisture conditions for about 7 days in order to see the results, and it was difficult to use this method during the seeds' dormancy period. During the past few years, the Beijing Municipal Seed Company has actively experimented and promoted the tetrazolium dyeing method to determine the viability of wheat seeds. This method has been universally put into use in every county under the municipality.

The tetrazolium dyeing method entails immersion of the sliced seed embryo to be tested in a colorless 2,3,5 mono-triphenyl-tetrazolium chloride solution (at 0.1 percent concentration) at a constant temperature of about 45° C. Those seeds that are observed after 20 minutes to have been dyed a bright cherry red are viable seeds, but those that have not taken the dye are dead. Advantages of the use of the tetrazolium dyeing method for determining seed viability are: speed with only from 20 to 30 minutes being required to make a determination about a sample; fairly good accuracy, which is somewhat higher than that obtained from actual sprouting with an error rate within 5 percent; simple equipment and ease of action with only a small knife, several test tubes and a slight amount of chemical being required; checking of a specimen requires a few cents worth of chemicals; no restriction because of the dormancy period of the seeds.

9432

CSO: 4007

BRIEFS

SALT PRODUCTION QUOTA OVERFULFILLED--Tianjin, 30 Jun--Changlu saltfields, China's leading salt producer on the coast of Bohai, turned out 3,940,000 tons of salt by the end of 25 June, fulfilling its annual state quota more than 6 months ahead of schedule. The saltfields exported 340,000 tons of salt in the first half of this year. Management has been improved and the workers and cadres are improving technical processes to achieve high and stable yields. The proportion of top-quality salt was raised to 100 percent this year. [Text] [Beijing XINHUA in English 1247 GMT 30 Jun 80]

CSO: 4020

BRIEFS

HEILONGJIANG COOPERATIVES--Some 200 grassroot supply and marketing cooperative directors attending the training class sponsored by the provincial supply and marketing cooperative advanced a 10-point proposal on ways to enliven the rural economy for the province's 1,091 cooperatives. The proposal suggests that cooperatives expand the purchase and marketing of farm and sideline produce. They should take the responsibility of purchasing all the contracted products and allow producers to sell products not governed by contracts. Responsible departments should help peasants find a market for their products such as potatoes, sweet potato starches and so forth that are not on their purchasing list. Cooperatives should purchase goods in their own districts; but they may purchase the commodities they do not produce or are in short supply from other counties and provinces. They should establish direct ties with trade stations and conduct transactions with them on a negotiated price basis. [SK020937 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 28 Jun 80]

HIGH WATER LEVEL--The water table in Heilongjiang's Songhua River in Harbin reached 115.4 meters above sea level on 24 June. This was 2.7 meters higher than the level on the same date last year and 1.61 meters higher than last year's peak. According to the department concerned, the high water table was attributed to the frequent rains since the beginning of June and to the increased volume of water--about three times more than the same period last year--discharged into this river from the (Dongnan) reservoir on the Dier Songhua River. The water level is expected to reach 115.5-115.6 meters on 25 and 26 June with a flow rate of 2,400 cubic meters of water per second. The department concerned urges the people to take necessary steps to prevent flooding. [SK301106 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 24 Jun 80]

INSECT CIRCULAR--The Heilongjiang Provincial People's Government issued an emergency circular calling for efforts to eliminate grass borer (cao di ming) pests. The circular says that governments at all levels should regard the elimination of grass borer pests as an extremely important task and organize technical personnel to inspect fields to inspect for damages. [SK300448 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 26 Jun 80]

FARMLAND WATERLOGGING--Since the beginning of June, Heilongjiang Province has had heavy rainfalls in some localities, causing most farmlands to suffer waterlogging. According to statistics, some 1 million mu of farmlands in 15 municipalities and counties are suffering from waterlogging. The water levels of the main provincial rivers are 1-2 meters higher than in the corresponding 1979 period. Flood prevention work is being carried out in various localities. By mid-June about 200,000 mu of farmlands in Wuchang County suffered from serious waterlogging. More than 130,000 cadres and masses from the county are working to combat flooding and to build drainage projects. This county now has dug some 1,200 escape canals and dredged more than 350 ditches. The drainage areas account for 75,000 mu. Hejiang Prefecture also has six counties suffering from waterlogging. Flood prevention work is being carried out in these counties, as well. [SK011045 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 26 Jun 80]

HEILONGJIANG RAINFALL--Since April the central and eastern parts of Heilongjiang Province have had excessive rainfall. There were 4.8 million mu of land subject to spring waterlogging. In June these areas continued to have excessive rains, resulting in varying degrees of disasters. The waterlogged acreage in summer is as much as 1 million mu. The people in these areas are taking appropriate measures to drain excessive water from the fields. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 25 Jun 80 SK]

AGRICULTURAL SYMPOSIUM--The Heilongjiang Provincial Agricultural Scientific and Technical Symposium concluded on 21 June. Ways to strengthen and improve party's leadership over agricultural scientific and technical work and to mobilize workers throughout province to promote agricultural modernization have been discussed at the symposium. Wang Luming, deputy secretary of the Heilongjiang provincial party committee and deputy governor of the province, addressed the symposium. [SK200448 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 21 Jun 80]

HEILONGJIANG FOREST--During his inspection in Yichun and Mudanjiang forest areas, Chen Jianfei, secretary of the Heilongjiang provincial party committee and deputy governor of the province, remarked on the protection of Korean pines. He said: Due to denudation over a long period of time, the number of Korean pines has been greatly reduced. It is imperative to take effective measures to protect them from illegal felling and to devote all efforts to their afforestation. [SK300448 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 21 Jun 80]

INSECT PEST--Grass borers [cao di ming] have been found in 24 municipalities and counties in Heilongjiang, threatening crops. Armyworms have also been discovered in some areas in Songhuajiang, Suihua and Mudanjiang prefectures. In Hailun County grass borers were found in 300,000 mu of fields, of which 150,000 mu has been damaged. In (Minle) No 5 production team in (Minle) Commune in Qingan County, 15 mu of soybeans were eaten by grass borers. [SK300448 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 26 Jun 80]

CSO: 4007

COOPERATIVE RESEARCH ON WHEAT CROP IN HENAN

Beijing RENMIN RIBAO in Chinese 11 Apr 80 p 2

[Article: "Outstanding Results from Henan Cooperative Wheat Research"]

[Text] Henan Province has achieved outstanding success throughout the province in cooperative research to develop wheat that has consistently high yields at a low cost. Units participating in the cooperative research throughout the province have increased from an initial 36 to the present 198. The research touches on more than 10 separate disciplines and the area of promotion has been enlarged to 30 million mu.

This cooperative research activity in Henan began in 1974. After many years of wideranging inquiry, the research has defined the processes and characteristics of dominant wheat varieties throughout the province in their tillering to form spikes, young spike differentiation, seed formation, and coming into milk, as well as differences among different varieties and different prefectures. It has also further defined the rational colony composition for the three levels of output, namely, low, medium, and high output, and the technical and economic criteria for rational application of fertilizer, rational irrigation, the morphophysiology of seedling care and cost structure. It has also made proposals for the technical measures to realize these criteria. It has evaluated varieties currently being planted as well as varieties in process of testing and demonstration, making proposals for a rational distribution of varieties in different prefectures for different levels of output. It has explored the laws pertaining to the occurrence of hot dry winds and the indicators of the principal meteorological factors in this province, summarizing and proposing comprehensive technical measures to guard against the hot dry winds. It has put forward correct ways and key technical measures to be taken to turn low wheat output to high output and to make high output even higher.

By way of applying the results of research promptly to production, numerous advanced models for bringing about consistently high yields at low cost have sprung up throughout the province to play an exemplary role in wheat production throughout the province. In the case of the brigades in the high yield areas of Yuetan and Houqiao, for example, mastery of the laws

governing wheat growth and development, which solved problems with drying while green and lodging, increased per unit yields from 800 jin to almost 1,000 jin, and costs per jin of wheat declined from .06 yuan to .023 yuan. Brigades from the medium yield areas of Mengpai and Wuliyang saw average per unit yields increase from 477 jin to 698 jin following the spread of reasonably close planting, rational application of fertilizer, rational watering, and such major technical measures. Forty-six base point brigades in low yield areas had particularly startling increased yields as a result of changes made to production conditions, increased applications of organic fertilizer, and selection of superior varieties. Per unit wheat yields increased from 286 jin to 461 jin. Now, not only are there some prefectures in Henan Province where per unit wheat yields amount to 500 jin, but there are some counties and municipalities where per unit yields run to 600 or 700 jin, creating a complete set of advanced experiences in bringing about consistently high yields at low cost. A great reduction has taken place throughout the province in the area where drying of plants while still green and lodging took place, and the quantity of wheat seeds used has universally declined. In the quantity of seeds used alone, a saving of more than 300 million jin of wheat can be saved annually.

In addition to the cooperative research in Henan Province, there has also been a training of personnel. Numerous hands skilled in wheat growing have sprung up among the farmers and the theoretical levels, and ability to solve real problems by special technicians has shown a marked increase. During the past several years, 1,249 pieces of writing on various specialized research reports, summaries of experiences, and academic treatises have been issued throughout the province. Two hundred eighty-eight newspapers and periodicals have been issued at the provincial level and above. At the All-Chinese Science Congress convened in 1978, Henan Province's comprehensive research problem on "high, consistent [output] and low [cost]" for wheat earned a prize for its major scientific and technical accomplishments.

The most important experiences in the development of cooperative research on "high, consistent, and low" in Henan Province has been: 1. clear-cut guiding ideology and cooperative research with emphasis on changing low output to medium output and medium output to high output with "high, consistent, and low;" 2. closely combining output for the current year to grasp key technical measures; 3. giving attention to important points and proceeding from the points to the larger picture; 4. strengthening leadership, building a complete cooperative organization, and doing a good job of cooperative work to assure that the organization will be supplied for the provincewide development of overall research and cooperative activities in technical promotion of "high, consistent, and low" for wheat.

HENAN

BRIEFS

BUMPER RAPE HARVEST--Beijing, 28 Jun--Xuchang Prefecture in Henan reaped a bumper harvest of rape from 622,700 mu with the total yield exceeding last year's record by 13.34 million jin. As of mid June, the commune members had already delivered 18 million jin of rapeseeds to the state, fulfilling 80 percent of the summer oil-bearing crops procurement task. [Beijing XINHUA Domestic Service in Chinese 0715 GMT 28 Jun 80 OW]

CSO: 4007

BRIEFS

SOIL SURVEY WORK--Wuhan, 25 Jun--Xishui County, Hubei Province, has completed its experimental soil survey work. It was determined by the Hubei provincial soil survey office that the work performed by Xishui County met the standard of quality required by the state. The county was one of the 11 counties selected by the province last year to carry out the experimental soil survey and was the first one inspected and accepted after its completion of the work. During the period of survey from the beginning of May last year to the end of May this year, the county collected 13,132 soil specimens, analyzed 67,000 laboratory data, produced 806 charts and wrote 318 reports, covering a total of over 2.93 million mu of land. [Beijing XINHUA Domestic Service in Chinese 0257 GMT 25 Jun 80 OW]

CSO: 4007

'HUNAN RIBAO' ON INDUSTRIAL CROPS, DIVERSIFICATION

HK010852 Changsha Hunan Provincial Service in Mandarin 2315 GMT 28 Jun 80

[Report on 29 June HUNAN RIBAO editorial: "Speed Up the Development of Industrial Crops and Diversification"]

[Text] The editorial says: To speed up agricultural production in our province and make the countryside prosperous more quickly, we must persistently readjust the internal structure of agriculture and, on the basis of guaranteeing a steady increase of grain production. Speed up the development of industrial crops and diversification. This is a major issue which should be made very clear in drawing up long term plans at the provincial, prefectural, county, commune and brigade levels and which should be grasped very tightly at present.

The editorial says: Our province has excellent conditions for developing industrial crops and diversification. Hunan is situated in the subtropical zone with a moderate climate and abundant rainfall, which are conditions suitable for growing many kinds of crops. It has a great deal of resources to be exploited. There is a very broad scope for developing industrial crops and diversification. So long as we persistently follow the correct policy, we can develop industrial crops and diversification very quickly.

The editorial stresses: In developing industrial crops and diversification, we must pay attention to reality, adopt means appropriate to local conditions, bring forward our strong points, avoid shortcomings and display our superior features to produce the best economic results. Different localities have their own superior features. Taking the province as a whole, we must vigorously develop such industrial crops as cotton, ramie, jute, amaryllis, hemp, rape, peanuts, sugarcane, tea silkworms, medicinal herbs, and so forth. We should vigorously develop the planting of trees for timber, oil and fruit and the growing of various other industrial forests. We should also make efforts to develop the breeding of pigs, cattle, sheep, rabbits, fish and [word indistinct]. As far as a prefecture, a county, a commune or a production brigade is concerned, we should consider its different conditions such as topography, climate, soil, water supply, and the habits and techniques

of production. We should grow grain crops, trees or any other industrial crops or carry out livestock breeding according to local conditions. We should lay emphasis on one undertaking while carrying out many others. We should establish the structure of production which best suits local conditions and our special characteristics. In particular, we should display our superior natural and economic features, pay attention to grasping a number of [words indistinct] varieties, rationally readjust the structure of production and build a number of commodity production bases for developing industrial crops and diversification.

What should be emphatically pointed out here is that in carrying out agro-scientific research in the past, we usually paid one-sided attention to problems of grain production, so that scientific and technical research on industrial crops and diversification remained a rather weak link. We should vigorously strengthen this link in the future. All localities should bring the role of the special and technical personnel into fully play and train and develop a special contingent for agriculture, forestry, animal husbandry, side-occupations and fishery. We should overcome the difficult technical problems in production and acquire experiences in securing high yields by combining special research with mass scientific experiments.

The editorial continues to say: The shift from exclusively concentrating on grain crops to making still greater efforts to grasp industrial crops and diversification is a big change in leading agricultural production. The party committees of all localities should suit themselves to this change, stress the key points and continue to grasp tightly and well the several links in the course of developing industrial crops and diversification as they grasp grain production. In this way, there will definitely be a great breakthrough in the development of industrial crops and diversification in our province. It will then be possible for agriculture to develop in an all-round way and the countryside to prosper more quickly.

CSO: 4007

BRIEFS

ANIMAL HUSBANDRY NOTICE--Recently, the Hunan Provincial People's Government issued a public notice on raising grass-eating animals which include cattle, goats and rabbits. The notice said that it is necessary to encourage the commune members to raise cattle at home including draft cattle, dairy cows and meat cattle, goats and rabbits. Communes and brigades which have the necessary conditions can set up stables for raising goats and meat rabbits. There are no restrictions on the number of animals that commune members can raise at home so long as this does not affect the collective production. The state will give 100 jin of feed for every newborn calf after it is a month old. In distributing grain, the production teams must reserve sufficient feed grain for the cattle and goats for winter. [Changsha Hunan Provincial Service in Mandarin 2315 GMT 25 Jun 80 HK]

HUNAN FLOOD, DROUGHT CIRCULAR--Recently, the Hunan flood prevention and drought resistance command issued a circular which demanded that the various areas step up preparations for preventing floods and resisting drought. According to forecasts of the meteorological departments, the rainy season in most areas in the province will end at the end of June. There will be autumn drought in July, August and September. Therefore, it is necessary to make full preparations, do a good job of harnessing and protecting the rivers, open up more water resources at projects where there is a water shortage and store as much water as possible. All areas must strengthen irrigation management, do a good job of the planned use of water, repair the dams and insure the water supply for irrigation. The management units of the water conservancy projects must further implement the proposals of harnessing the rivers and supplying water for this year and formulate a rational policy. At present, the flood season in the province still has not passed. The flood season in the lake areas still has not arrived and floods may occur at any time. [Nanning Guangxi Regional Service in Mandarin 1130 GMT 24 Jun 80 HK]

HUNAN FLOOD--After the serious floods in the Li River areas at the end of May and in early June, on the evening of 24 June, rainstorms occurred again. As a result, the water levels in the Li River and its branches also rose. On 26 and 27 June, the flood crest in some rivers branches will nearly reach or exceed the highest level for the year. Sun Guozhi, Jiao Linyi and Liu Fusheng, responsible comrades of the Hunan Provincial CCP Committee and the Provincial People's Government, who are inspecting work in Changde Prefecture

have also gone to Li County to inspect flood resistance and help the local cadres formulate plans to resist floods. [Changsha Hunan Provincial Service in Mandarin 2315 26 Jun 80 HK]

COTTON PRODUCTION--Changsha, 23 Jun--Cili County, Hunan, has whipped up peasants' enthusiasm in growing cotton. As a result, the county's total output of ginned cotton in 1979 reached 106,000 dan, marking an increase of 25 percent as compared with that in 1978. The county has expanded the total area of cotton fields from last year's 80,000 mu to this year's 130,000 mu. As of now, 3.47 million jin of seeds of fine strains are available for sowing. [Beijing XINHUA Domestic Service in Chinese 0243 GMT 23 Jun 80]

CSO: 4007

BRIEFS

SILKWORM COCOON PRODUCTION--Nanjing, 23 Jun--Jiangsu Province in 1980 produced 300,000 dan of silkworm cocoons, some 20 percent more than 1979 production. [Beijing XINHUA Domestic Service in Chinese 1322 GMT 23 Jun 80]

TEA HARVEST--Nanjing, 24 Jun--Jiangsu Province this year harvested 40,100 dan of spring tea, 10 percent more than last year's output. [Beijing XINHUA Domestic Service in Chinese 0145 GMT 24 Jun 80]

EARLY RICE CROP--Yangzhou Prefecture, Jiangsu, is growing 1.9 million mu of early rice. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 28 Jun 80]

SOYBEAN PLANTING--As of 22 June, Sihong County, Jiangsu, has planted 130,000 mu of soybean. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 29 Jun 80]

CSO: 4007

BRIEFS

JILIN FARM MACHINERY--In order to ease the peasants' burden, the Jilin Provincial Financial Bureau and the Provincial Farm Machinery Bureau recently revised the regulations on state subsidies for repairing farm machinery. State run farm machinery manufacturing and repair plants offer free service for overhauls and repairs on all types of tractors and internal combustion engines. Peasants pay only for spare parts, fittings and material costs; the state pays for labor charges. In repairing other farm implements, peasants pay for 80 percent of the total cost, and the state pays for the other 20 percent. [Changchun Jilin Provincial Service in Mandarin 2200 GMT 26 Jun 80 SK]

CSO: 4007

NEW STRAIN OF CHINESE CABBAGE CULTIVATED

Beijing RENMIN RIBAO in Chinese 16 Apr 80 p 4

[Article by Li Mingjiu [2621 2494 0036]: "Shenyang Quick Cabbage--New Variety of Early Maturing Chinese Cabbage"]

[Text] In the northern part of our country, up until the time that Chinese cabbage goes to market in the winter, it is the off season for vegetable production and it is hard for people to get vegetables to eat. Now, successful breeding by the Shenyang Municipal Agricultural Institute of an early maturing Chinese cabbage, which is sown in early or mid July for marketing in late August, can solve the difficult problem of a shortage of vegetables in the north.

Shenyang quick cabbage is a male sterile dual line first generation hybrid. It is characterized by a short growing period, requiring only from 50 to 55 days until maturity; tolerance of high temperatures, growing during the dog days of late July and early August virtually without outbreaks of viral disease; fast heading, requiring only 40 days from sprouting to heading with 10 days more to complete head growth; and even growth with plant height being about 40 centimeters and plant diameter being about 19 centimeters. This cabbage is crisp, tender, and much welcomed by the masses.

Cultivation of Shenyang quick cabbage over a large area in the suburbs of Shenyang began in 1977, and during the past 2 years, the spread of its cultivation has been experimented with in Beijing, Tianjin, Shanxi, Zhejiang, Guizhou, Xinjiang, Jilin, and Heilongjiang with per mu yields of over 10,000 jin.

Shenyang quick cabbage has been rather well received by vegetable farmers and the commercial sector. Since its growing season is short, vegetable units can plant an additional crop of vegetables. In the north, once Shenyang quick cabbage has been harvested, white dew onions or ratoon spinach may be planted with an additional income of more than 100 yuan per mu being earned. The commercial sector is also able to supply vegetables during August and September.

This new variety of cabbage was examined and approved by the Liaoning Provincial Crop Varieties Examination and Approval Committee in March 1979, designated for extensive planting, and named Shenyang Quick Cabbage. This cabbage may be sown in either autumn or spring. Sprouted in cold frames during early April, it may be planted to the fields in early May, and marketed around 10 June.

BRIEFS

LIAONING HYBRID RICE--The Rice Research Institute of the Liaoning Provincial Agricultural Academy in conjunction with related units has successfully bred a new hybrid geng rice variety, "Liaoyou No 1." Following examination and approval by the Provincial Agricultural Crops Examination and Approval Committee, it has been decided to popularize it over a wide area throughout the province this year. The Liaoning Rice Research Institute began research with geng rice in 1971, and in 1975 they accomplished a matching of "three lines" to successfully breed "Liaoyou No 1," a new hybrid geng variety. The root system of this hybrid geng is well developed; growth is vigorous; heads are large and grain numerous, with the number of grains averaging from 60 to 70 more per head than in conventional varieties. The quality of the rice is good. Last year Liaoning conducted test plantings over a large area and joyously reaped bumper harvests. Dawa County, the prolific producer of rice, last year test planted 155,500 mu in this hybrid geng variety averaging 1071 jin per mu, which was an increase of 148 jin per mu over the formerly used "Fengjin" superior variety. Statistics show that more than 500,000 mu of "Liaoyou No 1" was planted last year inside and outside the province for an increased output of about 100 million jin. This new variety has been popularized not only over a wide area of Liaoning, but it has also been introduced this year to Beijing, Shanghai, Shandong, and Jiangsu. [Text] [Beijing GUANGMING RIBAO in Chinese 5 May 80 p 2] 9432

CSO: 4007

BRIEFS

PESTS DAMAGE CROPS--Since mid-June, grass borers [cao di ming] have been found in some 8.5 million mu of fields in Nei Monggol. Grass borers are a pest to some 90 kinds of crops, especially oil-bearing crops, beets, vegetables and potatoes. Nei Monggol suffered serious damage from grass borer pests in 1953, 1954, 1956 and 1958. [SK300406 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 20 Jun 80]

CSO: 4007

NATIONAL GRASSLAND POTENTIAL REPORTEDLY CAN BE TAPPED

Beijing GUANGMING RIBAO in Chinese 14 Apr 80 p 1

[Article by Li Wei [2621 5588]]

[Text] People (generally) know that Qinghai Province is one of our country's important herding areas, but they do not have an accurate idea at all of just how large an area of grassland it is. Recently, reporters learned from the Qinghai Province Agricultural and Herding Committee that as a result of 20 years of arduous work out on the prairie, scientific and technical work teams staffs in the grasslands of Qinghai Province have determined that the area of usable natural grassland possessed by Qinghai Province amounts to 500 million mu.

After the "gang of four" was smashed, Qinghai grassland work teams, on the basis of data accumulated over the years, consulted and culled information from relevant documents of fraternal units both within and outside the province, conscientiously studied the natural conditions of Qinghai's grassland and its present production situation, and analyzed grassland types and rules for distinguishing among them, distinguishing six types of natural grassland, and 47 grassland groups, describing and evaluating according to group, pointing out the good and negative points of each grassland grouping and which varieties of livestock it is appropriate to graze in each. At the same time, they also wrote and drew up books and charts such as "Natural Resources of the Qinghai Grassland," "Statistical Table of Qinghai Grassland Resources," "Chart of Qinghai Province's Natural Grassland Types," "Chart of the Present State of Seasonal Use of Qinghai Grassland," etc.

Through investigation and research, the grassland work teams also clarified the proportion of Qinghai's usable grassland to farmland as 54.3 to 1. Based on the average grass-producing capacity of the land, it was found that on the average it takes 10.5 mu to support a single sheep or goat, so that the total area of natural grassland in the province could support 47 million head. When compared with the numbers of livestock actually being raised, the three autonomous prefectures of Yushu, Guoluo and Haixi all have definite surplus areas where livestock production could be developed.

in high, frigid herding areas, in appropriate semi-agricultural, semi-herding areas in semi-frigid and warm areas, and in semi-agricultural, semi-herding communes in purely herding areas, the development of livestock production also has great potential that could be exploited.

In order to make reasonable use (of this potential), improve and built up Qinghai's grassland and speed the development of Qinghai livestock production, the Qinghai Province grassland work teams then investigated the grassland's resources in greater detail, and completed the work of planning and division into districts, bringing up many valuable suggestions.

9634

CSO: 4007

BRIEFS

QINGHAI MARMOT--The Qinghai provincial marmot fur production and procurement work conference was held 21-26 June. The provincial people's government decided to form a leading group on marmot fur production and procurement and to organize a professional team of 5,000 persons to hunt marmot throughout the province. Ga-Bu-Long, deputy governor of the province, presided and addressed the conference. [SK021012 Xining Qinghai Provincial Service in Mandarin 1100 GMT 28 Jun 80]

CSO: 4007

FARMING TECHNIQUES PROMOTING STATIONS REOPENED

Beijing RENMIN RIBAO in Chinese 16 Apr 80 p 4

[Article: "Shaanxi Revives Stations for Promotion of Farming Techniques"]

[Text] The Shaanxi Provincial People's Government recently approved and forwarded to the Provincial Bureau of Agriculture the "Report on the Provincewide Revival of the System for Promotion of Farming Techniques" in a decision to revive the system for promoting farming techniques throughout the province.

Following establishment of the People's Republic, Shaanxi Province formed a rather complete system for promoting scientific farming techniques, which made outstanding achievements in the spread of scientific and technical discoveries, superior varieties, advanced planting techniques, improvements in the system of cultivation, reasonable application of fertilizer, improvements in farm implements, and experiences in increasing production. In the course of the Great Cultural Revolution, farming technique promotion work was severely damaged as administrative decrees and blind guidance substituted for science and technology with great losses ensuing for production. Once the "gang of four" was smashed, farm technique promotion work gradually revived and made some gratifying achievements. During the past 2 years, hybrid rice cultivation throughout the entire province has spread rapidly from 400 mu to 370,000 mu. By rough estimate only, just by doing a good job in spreading existing superior varieties and in promoting existing planting techniques, plus doing a good job in controlling diseases and insect pests, even with no further increases or only slight increases in the amount of investment in agriculture, grain output can be increased by 1 billion jin.

The Provincial Bureau of Agriculture's report pointed out that if work in the promotion of farming techniques is to be truly strengthened and a system established for the promotion of techniques, the main stations for the promotion of farming techniques in the province must first be reconstituted, and enterprises must be established in the Provincial Bureau of Agriculture to organize, regulate and decide. Each prefecture (or municipality) must also set up central stations for the promotion of farm techniques, and counties (or municipalities or regions) should set up stations for the promotion

of farm techniques. Counties that already have agricultural institutes need not set up additional stations for the promotion of farm techniques, but their names may be changed to agricultural science and technology promotion institutes (or stations), or they may display two signs as a combined organization. Whatever form they adopt, they should give principal emphasis to the promotion of techniques.

The duties of stations for the promotion of farm techniques at every level are: 1. to demonstrate and promote the results of research in agricultural science to guide communes and brigades to institute scientific farming of fields; 2. to summarize and promote advanced measures for increasing yields that derive from the masses; 3. to train farmers and farm technicians, and to do a good job of building a corp for the promotion of farm techniques; 4. propagandize and spread knowledge of agricultural science and technology to raise the scientific and technical level of the peasant masses and basic level cadres.

9432

CSO: 4007

BRIEFS

JOINT STOCK COMPANY--Jinan, 25 Jun--A new joint stock company financed and run by collectives and commune members has been set up in Mindi Commune, Heze County, Shandong Province. Using idle capital invested by collectives, cadres, staff and workers and commune members, the company has run various kinds of plants and enterprises. Total value of the company's output from February to May was 235,000 yuan, or 3 times that in the corresponding period of 1979 and 30 percent more than originally planned for this year. The number of stocks is unlimited and they are worth 300 yuan each. Every year the company distributes 60 percent of its net profit as dividends; 20 percent is used to expand production and the remaining 20 percent as the commune's accumulated fund. The company's methods have greatly spurred the enthusiasm of the collectives and individuals to invest. [Beijing XINHUA Domestic Service in Chinese 0350 GMT 25 Jun 80 OW]

SHANDONG ON-THE-SPOT CONFERENCE--The Shandong Provincial Scientific and Technological Commission recently held an on-the-spot conference in Qihe County on spreading the technique of drying grains through low-heat stoves. During the conference, participating comrades visited the firms which employed this technique, listened to the technical briefing and discussed the issue of publicizing this technique. The provincial scientific and technological commission urged various localities throughout the province to apply and popularize this scientific research achievement as soon as possible in line with the actual local situation so as to prevent grains from becoming mildewed. [Jinan Shandong Provincial Service in Mandarin 2300 GMT 23 Jun 80 SK]

COTTON CROP--Jinan, 27 Jun--Liaocheng Prefecture, Shandong, has stepped up field management of 2.2 million mu of cotton fields. [Beijing XINHUA Domestic Service in Chinese 0129 GMT 27 Jun 80 OW]

CSO: 4007

SHANGHAI

MINISTRY OF AGRICULTURAL MACHINERY GROUP COMMENTS ON INVESTIGATION

Shanghai JIEFANG RIBAO in Chinese 8 Feb 80 p 2

[Article by Fudan University journalism trainee Li Li [2621 5461] and staff reporter Ji Jingfeng [0679 2529 1496]: "How to Bring Prosperity to Peasants?--Some Views of the Ministry of Agricultural Machinery Economic Investigation Group on Agricultural Mechanization in Shanghai Suburbs"]

[Text] In December last year, the Agricultural Machinery Ministry's economic investigation group conducted in Shanghai an investigation into problems between the economic system and structure and the development of agricultural mechanization. They attended the "National Symposium on the Transformation of Chicken Farms and Pig Farms into Factories" at Jinshan, visited the dairy farms and chicken farms and fowl-processing factories in the counties of Shanghai, Baoshan, Chuansha and Nanhui, and then came to some production brigades in Wuxian and Wuxi, Jiangsu Province, to carry out inspection. They studied particularly carefully the data of the agricultural mechanization experimental unit at Malu Brigade under Malu Commune in Jiading County, listened to the opinions and suggestions of the rural basic level cadres and commune members, and discussed with the concerned leading cadres of the municipalities and counties such problems as "how to bring prosperity to the peasants?" and "how to accelerate the development of agricultural mechanization?" The advisers of the Ministry of Agricultural Machinery, Yang Zao [7122 2483] and Chun Han [2504 1383], also took part in this work of investigation.

What's to be done with the surplus labor?

Many comrades were worried, with the rapid development of agricultural mechanization, whether the surplus labor [problem] could be worked out. The comrades of the investigation group admitted that it was truly a problem. From the first day of our operation of agricultural mechanization, we took into consideration the problem of the outlet of surplus labor, lest mechanization would not bring about any advantage. The experience of Malu Commune answers this question. This production brigade had more than 900 members. When an experimental unit of completing a chain of equipment for mechanization was set up, more than 400 persons

were spared. What should they do? The brigade ran industry and engaged in multiple undertakings. They built a mushroom mansion of 3,400 square meters, which yielded income in the same year. It was not possible to operate such a big sideline enterprise without a labor force. It was also not possible without talking about the economic results. When the "gang of four" was in power, it was said that "vegetable growers should not live on marketable grain." When agriculture could not stand up, sticks were used to support it. This brought poverty, instead of prosperity, to the peasants. We should not continue to rely on a single economy. Those living on a mountain live off the mountain, those living near the water live off the water. We should engage in the most suitable thing, either farming, afforestation or animal husbandry. Agricultural mechanization and commune industrialization are two blood brothers and a pair of close sisters: they cannot be separated. Mechanization goes on, labor force goes off, things develop in an all-round way, and we should make the best possible use of men. Acting as the Malu Commune did, we can bring prosperity quickly to the peasants. Their direction was correct, their ways of doing things are also practicable. It is said that in 1980 all the counties in the suburbs will each set up an experimental unit of completing a chain of equipment for agricultural mechanization in a production brigade. Some counties will set up the experimental unit even in a commune. It's very good!

The "Three Transformations" and the "Four Elevations"

The purpose of accelerating agricultural mechanization is to bring prosperity quickly to the peasants. In developed capitalist countries, not many people are engaged in agriculture. The population of the United States is more than 200 million. Only a few million are engaged in agriculture, but scores of millions are engaged in commerce and other service trades. Many of us look down upon commerce; however, with the development of mechanized farming, more and more people will go into business and learn trading. Following the same pattern, and growing only grain, it is not easy for the peasants to become prosperous. In the big and medium-sized cities, and in state farms, it is possible to develop combined enterprises of agriculture, industry and commerce. Such enterprises can be run jointly by communes and also by state enterprises and people's communes. Stress should be put on the industry of processing farm and subsidiary produce, to turn out primary products or finished products from raw material supplied by the production teams, which will be sold to the state or go directly to the market. Some processing industries in cities should also spread to communes and production brigades in a planned way according to needs and possibilities, and help the communes and brigades to develop their industry. In a word, the mechanization of agriculture must be integrated with the transformation of agriculture into a specialized line of trade and with the diversification of undertakings. With these "three transformations," we can then achieve the "four elevations" to gain high labor productivity, high output, high proportion of marketable products and high income of commune members.

Why is it so difficult to do such a good thing?

During talks with the people, the comrades of the investigation group praised repeatedly the "chicken restaurant" of Nanhui County, and asked: "Why is it so difficult to do such a good thing? By doing business, are the communes and brigades in anybody's way?" They told your reporter to show them for reference the reports and pictures of the "chicken restaurant" in the JIEFANG RIBAO and in the Suburban Edition of JIEFANG RIBAO, and expressed their warm desire that the JIEFANG RIBAO would give greater support to new things and speak for the peasants on these problems of communes and brigades doing business. Everybody rendered lip service in support of the resolutions of the Third and Fourth Plenary Sessions of the Party Central Committee; however, there are differences of interpretation, and the resistance is still very great. In the resolution of the Party Central Committee on the acceleration of agricultural development, it is said that the channels of production, supply and marketing of enterprises of communes and brigades should be kept open. However, at present there are people standing in the way. It is not possible to run joint enterprises of agriculture, industry and commerce. The central authorities hope to bring prosperity first to a part of the peasants. Some people are afraid of the peasants becoming prosperous. What is the reason?

All people are impatient; there is hope.

The comrades of the investigation group said that the central leaders were very impatient and eagerly wished to bring prosperity first to a part of the peasants. Voices heard from the grass-roots were also very strong, demanding a resolution of the issue. All people of high and low levels are impatient. This is a good thing showing that it is hopeful. The Shanghai papers show unanimity on two points: No 1, to change from one single undertaking to an all-round development of farming, forestry, animal husbandry, sidelines and fisheries; No 2, to undertake agriculture, industry and commerce [at the same time]. Farming alone is not possible! The peasants will be prosperous from the development of industry and commerce. The suburban areas of big cities have a very urgent task of setting up bases of non-staple foodstuffs for the adequate supply of fowls, eggs, meat, fish, milk and other subsidiary foods. Of course, it is not easy to set up bases of non-staple foods. If things go wrong, it will be difficult for the whole country to send non-staple foods to Shanghai. We should find means to meet the shortage of feed. It may be possible to increase exports in exchange for feed.

The comrades of the economic investigation group from the Ministry of Agricultural Machinery also emphasized that the development of agriculture depends upon the policy of the party. We should study carefully how to implement various policies of giving awards in rural areas.

COMMENTATOR DISCUSSES MEASURES FOR INSURING FISH SUPPLY

Shanghai JIEFANG RIBAO in Chinese 5 Apr 80 p 1

[Article by commentator: "Important Measures To Make Sure the People Have Fish To Eat"]

[Text] The "Announcement by the City's Aquatic Products Bureau on Strengthening the Protection and Propagation of Aquatic Resources" promulgated by the Shanghai City People's Government concerns reorganization of the order of fishery production, development of aquatic products and the problem of fish as food for thousands of millions of people. Its promulgation raises the needs of the people's livelihood and also the need of hastening the construction of four modernizations.

Aquatic resources are a treasure and wealth of the nation. Aquatic products departments should exert efforts to increase production. But the animal and plant resources in the waters are not limitless. They have their own pattern of growth. According to the present situation, the speed of their growth is far slower than that of the living needs of the people. To solve this conflict, people must act according to the saying "when one plants melons one gets melons and when one plants beans one gets beans." Ways must be devised to propagate aquatic resources, protect the environment for the growth of aquatic animals and plants so that they can multiply, grow quickly, and grow big. This is to say, things must be done according to the objective patterns. The scientific attitude must be adhered to. Great efforts must be exerted to increase propagation and rationally utilize aquatic resources. Propagation is active protection. Protection is to better propagation. The final goal of propagation and protection is to let the people have fish to eat on a long term basis and to have more aquatic products to consume.

For many years, foreign fishing has abused its privileges. In our work, we have not paid sufficient attention to the propagation and protection of aquatic resources. Now we suffer the consequences of punishment by nature. This means that in oceanic fishery production, the yellow croacker which is loved by the people now cannot survive a fishing season. The production of hairtail has also visibly dropped. If measures

are not taken, such as standards for allowable catch, setting up regions where fishing is prohibited, seasons when fishing is prohibited, limitations on the nets, elimination of some operations and nets that damage the resources, then the fish caught will become smaller and smaller and fewer and fewer and it will be very difficult to have fish as food.

Our city is situated along the river and the sea. The coastline is 500 kilometers long. There is a lot of coastal waters and beaches which can be utilized. In inland waters, there is 400,000 mu of water surface which can be used to cultivate fish and the potential is great. If these can be fully utilized, if sea water fishery and fresh-water fishery can be developed, and the unit area yield can be raised, the supply of aquatic products can be greatly improved. At present, each county in the suburbs is actively developing aquatic production. All fronts of the city should give their support. But, developing fishery in sea water and fresh water is now threatened by pollution and the craze for stealing fish and fishing. In particular, the craze for stealing fish and fishing pose the greatest threat. Statistics compiled by concerned departments show that when the situation is serious, about 10,000 people gather around bodies of water where fish are being cultivated in one county to steal fish, to fish, and some people have even gone and beaten fishermen who protect the fish and farmers and people have ganged up during the daytime to steal fish. These people not only destroy fishery production, destroy aquatic resources, but also seriously violate the law. Many production units urgently need special laws for protection. Therefore, "the announcement on strengthening the protection and propagation of aquatic resources" will necessarily mobilize the fishermen and farmers to actively cultivate fish and it will assure the normal progress and development of fishery production and assure that the people will have fish to eat.

9296

CSO: 4007

CULTIVATING FRESH-WATER FISH IN SUBURBS URGED

Shanghai WEN HUI BAO in Chinese 27 Mar 80 p 4

[Article by Jiang Changzuo [1203 7022 4373] and Xia Zhenfei [1115 7201 7204]: "A Bright Future for Cultivating Fresh-water Fish in the Suburbs"]

[Text] Fresh-water fish, whether it is the black carp, grass carp, big head carp, silver carp, carp, gold carp, or fresh-water bream, is tasty and loved by young and old and they have always been in short supply. Now the central market is said to have fresh supplies frequently but the price is still high. People hope that state-run markets will supply more fresh-water fish!

During the past 3 years after crushing the "gang of four," fresh-water fishery in the Shanghai suburbs has revived and developed. Last year's production reached 250,000 dan, creating a record. But for the entire city's 11 million population, each person gets only 2 and a half jin of fresh-water fish a year. This is far from satisfying the need. Actually, the potential of developing fresh-water fishery in the suburb is great. According to estimates by concerned departments, there is still 100,000 mu of lakes, rivers and ditches for fish culture in the suburb. There are also low marshlands and coastal beaches which can be dug up to build fishponds for fish culture. The bodies of water in which fish are being cultivated still have a low yield and this can be greatly raised. The suburb with the best fresh-water fishery production is Nanhui County. The area of water being used for fish culture constitutes only one-tenth of the total area of water in the suburb used for fish culture. Yet the production constitutes one-sixth of the total suburban area. If each county can catch up with Nanhui County, the production of fishery products will double the present yield. It can thus be seen that the potential for developing suburban fresh-water fishery is great.

Then, in hastening the development of suburban fresh water fishery, what are the problems that need to be urgently solved?

One of the problems is that the party unit at each level should strengthen leadership in fresh-water fishery production. Workable plans must be

drawn up. Some comrades still believe "fish is the last to be counted and one can have it or can do without it." They do not consider fishery production as an important component in developing the village economy and improving the people's livelihood. In recent years, worldwide abuse of fishing and exploitation have depleted aquatic resources. Foreign fishery experts all believe: "Ocean fishery production has reached its limits." "We cannot expect visible increases." Therefore, actively developing fresh-water fishery production is even more important. The situation in Shanghai shows that throughout history fish were caught but not raised. Pisciculture began in the 1950's and in the 1960's; fish were raised in ditches and rivers. During the 1970's, special fishponds for fish culture were established. The foundation is good. In the 1980's, greater achievements should be made. Each county and commune must be like Nanhui County. The leadership should personally oversee the work. There must be someone in charge from the top to the bottom echelons. There must be a plan. There must be definite measures. Some concrete problems must be truly solved. Production of fresh-water fish can be greatly raised.

The second problem is that the policy concerning regulation of water surfaces must be implemented further. If the policy concerning regulation of water surfaces is not implemented thoroughly, if the fish are allowed to swim back and forth all over the place and one cannot even catch his own fish, then who is going to do such a stupid thing? Now, Nanhui County is implementing the policy of regulating the water surfaces according to administrative levels. The ownership belongs clearly to the county, commune and the brigade. The city and county make the investments to utilize beaches by encircling an area for reclamation, digging fishponds for special fish culture and establishing the county's sideline food bases. The water surface of the Dazhi River under the management of the county is being managed jointly by the Dazhi River Administration and concerned communes. Fish are cultivated in a unified way. Management is unified. Catching of the fish is unified. Profits are divided proportionally according to the area of jurisdiction of the water surface. The water surface of Tongzaogang within the jurisdiction of the commune is managed by the commune's aquatic brigade. The areas of Tuoheyuangou and Sishuibintou under the jurisdiction of the production brigade are managed by production brigades which cultivate and catch the fish. In this way, the rate of utilization of water surface is highly raised. Conversely, where the ownership of the water surface is not clear, fish cannot be raised.

The third problem is that management of fishponds must be grasped well. In recent years, stealing fish is rampant. According to understanding, many production brigades have water surfaces but do not cultivate fish. This is the major reason. Because there are people who steal fish, therefore, one does not dare cultivate fish. This is like giving up eating because of the fear of being choked by food. This is not necessary. But the trend of stealing fish must be stopped. Now, our nation's

public security administration has republished rules of punishment. There is an article governing the act of stealing fish. Since there is a law to follow, the law must be carried out to truly protect the rights of the producers. Nanhui County's Henggou Commune set up a fishery management team in August of last year. During the day the team cultivates aquatic products and during the night the team patrols the grounds. People who steal fish are punished and fined accordingly. This procedure is welcomed. This year, the number of production teams cultivating fish increased from 17 to 70. This experience is worth popularizing.

The fourth problem is to elevate the level of scientific cultivation of fish. According to statistics, there were a total of 17,000 mu of special fish ponds for cultivating fish which entered into production last year throughout the city. Average per mu yield of fish was 294 jin. Of the total, over 100 mu produced a per mu yield of 1,000 jin. There were over 20 mu which had the highest yield. The per mu yield was over 200 jin. The difference in the yield is mainly due to the differences in the level of scientific cultivation of fish. Therefore, forceful measures must be taken to elevate the level of scientific cultivation of fish. City and county level aquatic products technology propagation stations must be quickly established to take charge of experiments of a mass character in aquatic sciences and propagation of new technology and new achievements in the entire city and in each county. County level farms for cultivating superior varieties of fish must be established. They should be in charge of purifying and strengthening the varieties of fish presently available. They should also introduce and propagate superior varieties of fish of our nation and of foreign nations. A citywide network to prevent fish diseases must be established to fundamentally solve the problem of the spread of infectious diseases among fish causing massive death of fish. New techniques of warm water flow, nets and containers, cultivating fish in factories, and scientific research in fish varieties, fishing equipment, fish diseases and feeds should be conducted so that there will be a big breakthrough in fresh-water fishery production in the suburbs.

Spring returns to the land and all creatures are alive. The past 2 or 3 months are appropriate for developing fishery production. It is hoped that the counties, communes and brigades in the suburbs can grasp the opportunity and exert all efforts to greatly develop fresh-water fishery.

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CSO: 4007

SHANGHAI CADRES COMMENT ON AGRICULTURAL PROGRESS

Shanghai JIEFANG RIBAO in Chinese 10 Feb 80 p 1

[Article by staff reporter Zhang Zhiyuan [1728 1807 6678]: "Recall the Turmoil of the Decade, Compare with the Great Change of Last Three Years, and Watch the Fine Situation"]

[Excerpt] How about the "three faces" in the suburban villages of the municipality in the last 3 years? [The "three faces" are the land surface (agricultural, sideline and industrial production), the market conditions (buying and selling on the rural market) and the people's faces (the mood of commune members)] The cadres said: (1) On the land, there was an abundant harvest of all food crops, there was an all-round development of agriculture, sidelines and industry, with progressive increases year by year. In 1978, the total grain output of the entire suburban area broke through the major mark of 5 billion jin which was an all-time high; the per unit area yield and total output of cotton and rapeseeds also surpassed past records. The production and the rate of self-sufficiency of non-staple food had risen on a large scale in consecutive years. In the last 2 years, the number of live pigs for sale increased by 920,000, that of fowls by 11.72 million and that of fresh eggs by 55.39 million jin. The situation of the industrial production of communes and production brigades was also very good. In 1978, the total output value of industries run by suburban counties, communes, towns and farms (agricultural farms) reached 2.9 billion yuan, and continued to increase on a large scale in 1979.

(2) On the market, it was thriving and prosperous, the commune members sold enthusiastically to the state their bumper harvest of farm produce and subsidiary products from collective large fields and private plots and, at the same time, bought in return large quantities of farm machines and tools, chemical fertilizer, pesticides and light industrial products. Today in the Shanghai suburban markets, everywhere are scenes of prosperity with brisk buying and selling. The amount of transactions in trading between the state and the collectives and commune members has doubled. The rural fair trade is also very active and becomes an effective supplement to the state-run markets.

(3) From the faces of the people, one can see that everybody is happy. The masses of commune members praised the policies towards the rural areas after the Third Plenary Session of the Party Central Committee as policies "helping the peasants" and "for the benefit of the people," and as "the best policies since the founding of the People's Republic." In contrast, during the decade when the "four evils" were in power, agricultural production in Shanghai suburbs was seriously sabotaged. For a long time, the output of grain, cotton and oil reached a stalemate, and even fell back. The rate of self-sufficiency of the production of non-staple food was also very low. In 1976, the self-sufficient rate of pork was only 50 percent, that of fowls and eggs was only 30 percent, the quantity of fresh-water fish for sale dropped by 22.3 percent as compared with that before the Cultural Revolution.

9039

CSO: 4007

BRIEFS

COMMUNE, BRIGADE INDUSTRIES PROFIT--Last years, suburban Shanghai agricultural commune workers shared the commune's production brigade industry profits to the extent of 36.1 million yuan, amounting to 8.3 percent of the total profits of the communes' production brigade industry, with each able-bodied worker receiving, on the average, 19.38 yuan. The agricultural communes' workers' sharing of the production brigade industry's profits is a matter following the smashing of the "gang of four." Last year, there were two main types of profit sharing. The first was a reward to a production brigade for having exceeded its production quota; in the other type, the money was allotted to the production brigades on the basis of land area or population, and afterwards distributed to the commune workers. The figure representing the sum of industrial profits shared by suburban agricultural commune workers last year was compiled in the first third of April by the municipal government departments concerned. According to figures compiled in the first third of April by concerned municipal government departments, last year the sum of the (proportion of the) profits of suburban communes' production-brigade industry used in support of agriculture amounted to over 93 million yuan, comprising 22 percent of the total profits, with each mu of farmland receiving on average the benefit of 19.90 yuan. The communes' brigade industries' profits used to support agriculture were mostly applied to the following several areas: the construction of water-conservancy works--over 50 million yuan; agricultural mechanization--over 15 million yuan; advanced technology for the production brigades' spread of agriculture, a subsidy for the purchase of plastic film, phosphate fertilizer and other production materials--over 24 million yuan. Other allotments totaled more than 2 1/2 million yuan. The communes' production-brigade industrial profits being used in support of agricultural production realized the guiding principle of "engaging in industry that is centered on agriculture." [Text] [Shanghai JIEFANG RIBAO in Chinese 10 Apr 80 p 1] 9634

GRAIN PRODUCTION--Songjiang County, Shanghai, reaped 160 million jin of summer grain this year. [Shanghai City Service in Mandarin 2300 GMT 26 Jun 80]

NEW STRAIN OF NAKED OAT SUCCESSFULLY BRED

Beijing RENMIN RIBAO in Chinese 16 Apr 80 p 4

[Article: "New Strain of Double Headed Naked Oats Successfully Bred"]

[Text] The High and Cold Regions Crop Institute of the Shanxi Provincial Academy of Agriculture has used a new method to cross naked oats with oats to successfully breed a first batch of a new double headed line of oats. These new lines represent a change from the former long branches and bushy heads to short branches and compact heads with numerous buds, numerous grains, large grains, resistance to lodging, and high yields. Among these strains, the 74067 - 8 has been experimented with and demonstrated at 10 bases in Zuyun, Youyu, Pinglu, Ningwu, and Shenchu counties, and in Chongli County in Hebei Province during the past 2 years with per mu yields reaching from 567.8 jin to 643.7 jin, which exceeded the present per mu yields from 42 superior varieties imported from the United States, Canada, and Australia.

Naked oats has a more than 2,500 year record of cultivation in our country. It is a crop that resists cold, tolerates poor soil, has bountiful nutrition, and is a crop that the masses enjoy eating and love to grow. Results of an analysis conducted in 1976 by the Health Research Institute of the Academy of Sciences on the nutritional properties of wheat, rice, millet, gaoliang, corn, naked oats, buckwheat, and broomcorn millet shows that the naked oats holds first place in the amount of fat, protein, calcium and released heat it contains, and that it is a food that tolerates cold weather and has abundant nutrition.

The successful breeding of this new strain by technician Li Chengwei [2621 2052 4850] and the naked oats research team led by him has created a special type of high yield naked oats variety for our country and has filled a void in our country's breeding work in naked oats. Now the new doubled headed oats variety is beginning to be extended in cultivation in areas where the growing of naked oats is concentrated.

9432

CSO: 4007

SICHUAN'S TAN QILONG INSPECTS FLOOD-STRICKEN AREAS

OW021627 Beijing Domestic Service in Mandarin 1200 GMT 2 Jul 80

[Text] According to a report by the Sichuan People's Broadcasting Station, a rainstorm in Wenjiang Prefecture, Sichuan Province, lasted from 27 to 30 June. The precipitation in Chongqing, Wenjiang, Pujiang, Qionglai, Xinjin, Guanxian and Dayi counties amounted to 200-300 millimeters within a few days, causing serious damage.

The Sichuan Provincial CCP Committee and provincial People's Government have paid close attention to the people in the disaster-stricken areas. On 1 July, Tan Qilong, first secretary of the provincial CCP Committee, made a special trip to the areas to obtain firsthand information on the disastrous conditions, to comfort the disaster-stricken people and to encourage them to rely on collective efforts to overcome temporary difficulties, help themselves by engaging in production and rebuild their homeland under party leadership.

Comrade Tan Qilong also gave specific instructions on further flood prevention work. The provincial CCP Committee held a special meeting to study and carry out flood relief work. The provincial CCP Committee and provincial People's Government on 2 July sent a comfort group to the disaster-stricken areas to help carry out flood relief work. Thanks to the united, vigorous efforts of the masses of people, cadres and PLA commanders and fighters, the disaster-stricken areas are now out of danger. The people there are determined to continue to combat the flood, help themselves by engaging in production and repay the kind concern of the party and government with positive action.

CSO: 4007

MEETING DEBATES PEASANTS BECOMING RICH QUICK

Discussion at Meeting

Tianjin TIANJIN RIBAO in Chinese 16 Mar 80 p 1

[Text] Recently, the municipal agriculture committee called a meeting to discuss ways for the rural villages to get rich. The problem of "how to make the collective bodies and members get rich as quickly as possible" was discussed openly. The participants were 12 delegates, representing the communes. They offered their opinions based on the practical experience of communes, brigades, production teams, and individuals.

Making the rural villages rich as quickly as possible is the common wish of rural cadres and masses. The advanced collectives and individuals who participated in the discussion agreed unanimously that the first step on the long road of getting rich is to criticize Lin Biao and the "gang of four" thoroughly in order to eliminate the remnant poison of the extreme leftist line so that they will have the courage to dare to be rich. The party branch secretary of Xiaodiaotai Brigade, Chenguandun Commune, Jinghai County, Zhang Jingjie [1728 734 0094], introduced the experience of ideological liberation. Early last year, while learning to implement the spirit of the Third Plenum of the Central Committee, the brigade party branch brought up the problem of getting rich to all the cadres and members of the village. Suddenly there were a lot of arguments. The cadres were afraid of being purged, and the members were afraid of policy changes. This fact demonstrates that the people are still bound by the extreme leftist poison of Lin Biao and the "gang of four." Right and wrong are not clear, and thoughts cannot be liberated. Even though they want to be rich, they cannot take the steps. They spent 18 days getting the cadres and members to learn two documents of the party Central Committee regarding the development of agriculture. They concentrated the discussion on the problem of "Do [we] want to be rich? Do [we] dare to be rich?" Following learning and discussing, the people saw clearly the reactionary substance of the extreme leftist line of Lin Biao and the "gang of four." They threw away the "stone handicap" on the road of getting rich. They developed confidence in implementing the two documents about agriculture and gained the courage to become rich.

Immediately afterward, the brigade laid down specific rules for arranging the various management and production responsibilities, from the planting of the individual private plots to family sideline occupations. For the past year, the production and income from the sideline occupations of that brigade increased 139,400 yuan to a total of 684,000 yuan, and the distribution to the members increased more than 50 yuan over the previous year, to 310 yuan.

In order to resolve the problem of whether there is the courage to get rich, the participants introduced experiences concerning ways for the collective to become rich, and offered opinions. They believed that one of the keys is to resolutely implement the policy of the party, to struggle hard, and to walk the road of combined development of agriculture and industry. The second is to establish a system of production responsibility with five quotas and one award-punishment system. The third is to make plans suitable for the land, the mountain, or the water in order to use local materials for comprehensive utilization of natural resources. The Dazhangzhuang Brigade of Baodi County has four production teams and 2,100 mu of cropland which is located in the bottom of the lowland of the county. Up to 1978, the members had to eat grain that was purchased back. The collective and its members are all very poor. Last year, under the guidance of the two agriculture documents of the central government, the cadre members unified their thoughts and put in a lot of effort. The total yield exceeded 70 percent of the year's quota. On the other hand, they worked at sideline occupations, and the income from this work reached 73 percent of the total income of the brigade. In this manner, the poor brigade was turned into a rich brigade. The diet level of the members reached 511 jin of grain per person--an increase of 60 percent over the previous year. The personal distribution level reached 265 yuan, an increase of 40 percent over the previous year.

All believed that the foundation for collective riches is the development of various forms of production. At the same time, expenditures must be tightened to manage the brigade thriftily. Opening the source and conserving the outflow should both be emphasized. The Wanjiatang Brigade of the Northern Suburb District paid attention to reducing all items of expenditure and got production costs to drop considerably. For many years, that brigade had insisted on comparing income and expenditures among the various production teams before distribution. At the time of distribution, the various production teams again compared to see which have lower costs and which have more accumulation. The practice of many years has made the members feel that "just hard work without thrift will result in working all year for nothing."

The head of the third production team of Laomidian Brigade of Wuqing County, Liu Yushun [0491 3768 7311], and the member of Daxiaozhikou Brigade of West Suburb District, Qu Yongshun [1448 3057 7311], are representatives of two well-to-do families. Their common understanding

is that "rich families are the foundation of a rich collective." Liu Yushun has four in his family. His wife takes care of household affairs; his older son participates in the labor; his second son studies in school. Last year, his whole family participated in the productive labor of the collective and the family sideline occupations to earn a total income of 1,800 yuan; the average income per person was 450 yuan. The grain reserve in his home is about 4,000 jin. His is a rich family, and his production team is also an upwardly mobile team. He said: "A cadre wants to be rich, also. How to be rich? Do a good job for the collective and do some work yourself. Long days and short days: the more you live, the richer you get."

During the discussion meeting, the participants studied the problem of how to live in the wealthy days after the collective becomes rich. The Wangdingti Brigade party branch deputy secretary from the West Suburb District, Song Baohua (1345 1450 5478), related her experiences which inspired all who were present. Last year, that brigade increased its income from 3.49 million yuan the previous year to 4.38 million yuan. The members of the brigade recalled the fact that presently, agricultural production depends to a large extent on weather conditions. If the brigade does not reserve enough capital, whenever there is flood or drought the livelihood of the members will be very unstable. The standard of living of the members should therefore be gradually raised. It would not do to distribute whatever the brigade has. Based on this principle, it was decided that 380 yuan should be distributed to each person. This decision was supported by the cadres and members.

Commentary Given

Tianjin TIANJIN RIBAO in Chinese 16 Mar 80 p 1

[Text] Recently, the municipal agriculture committee called a discussion meeting on how to make rural villages rich quickly. The meeting opened discussions of the subject in all the rural villages around the city. We hope comrades, all the suburban counties and commune brigades will participate in the discussions enthusiastically while learning the announcement of the Fifth Plenum of the Party Central Committee and Comrade Deng Xiaoping's important report on liberating thoughts and summarizing lessons of experience. Through discussions, the right and the wrong way may be distinguished, comprehension raised, and ways to get rich discovered. The collective economy will be developed, agricultural modernization accelerated, and the rural villages of our city established as prosperous new villages.

Since the spirit of the Third Plenum of the Party Central Committee began to be implemented, a new situation of prosperity and advancement has begun to appear in the rural villages of our city. The current production level of the villages and the living standard of the people remain

far from new villages of modernized agriculture and wealthy socialism, however. Discussing how to make rural villages rich quickly is an important measure for further implementing the various policies of the Third Plenum of the Central Committee and is also an ideological preparation for the struggle toward the target of agricultural modernization in the 1980's. As the discussions develop, the policies of the Third Plenum will be more deeply implanted in the hearts of the people and a new overall development of agricultural production will occur.

Allowing a portion of the teams and farmers to be rich first is a policy that has already been decided by the party. In dealing with the problem of getting rich, the effects of the remnant poison of the extreme leftist line of Lin Biao and the "gang of four" cannot be underestimated. Although the "gang of four" has been defeated for more than 3 years, some comrades still would rather let all the people suffer poverty together. They dare not let some communes, brigades, and members who have relatively better conditions get preference in production and distribution and become rich first. These comrades have been scared by the big hat of "capitalism" dished out by the "gang of four"; it is difficult to eliminate this fear. To this day, the color of their faces changes when they hear the word "money." They shake when they hear the word "rich." There are also some comrades who have accumulated experience in leading production and have become content and arrogant. They are slow in accepting the current policies of the party; their understanding of these policies is poor; and their effort in implementing these policies is deficient. There are also a few comrades who become very excited when there is a minor deviation in the execution of the current policies of the party. They see trees but they cannot see the forest. They see the tributaries but they cannot see the main stream. They choked once, so they have given up eating. They attempt to kill the newly inspired positiveness of the masses for getting rich. Of course, on the route to riches, there are also those who have no sense of direction, do not follow the policies of the party, and do not obey the laws of the state. For this reason, during discussions on the subject, we must criticize the extreme leftist line of Lin Biao and the "gang of four" to resolve the problem of whether we dare to become rich. There remain the following problems to be resolved as well: How rich can a collective or individual be and still be in conformity with the direction of socialism and the policies of the party and be regarded as on the road of common and shared wealth? How rich should [a collective or an individual] be when it is contrary to the policies of the party to be on the wrong road, [one not in keeping with] the direction of socialism? On the problem of getting rich, what is the correct way of handling the relationship among agriculture, forestry, animal husbandry, sideline occupations, and fishery? When a portion of the production teams and a portion of the farmers are allowed to get rich first, would this cause polarization in the rural villages? In the process of getting rich, what is the way to strengthen production management, labor management and financial management? After becoming rich, is it necessary to continue hard struggle to keep up the good tradition of managing the commune thriftily? How can the various trades

and industries help support rural villages, communes, brigades, and commune members to become rich as fast as possible?...When these problems are resolved, we can walk fast on the road of getting rich with fewer detours.

Discussions on this subject are in reality an ideological education for the farmers about socialism and collectivism. For this reason, the party organizations of the various suburban districts, counties, communes, and brigades should lead the discussions well in order to make the discussions truly a successful mobilization of the cadres and members of rural villages to struggle, with energy and force, for a more abundant harvest this year.

6168

CSO: 4007

XINJIANG

BRIEFS

XINJIANG SUGARBEETS--Xinjiang region has completed the sowing of sugarbeets on 350,000 mu of land, 50,000 mu more than in 1979 and the largest acreage in the region's sugarbeet growing history. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 18 Jun 80 OW]

XINJIANG LIVESTOCK TAX REGULATION--A new livestock tax regulation was recently promulgated by the Xinjiang Regional People's Government for trial enforcement in the region this year. The new regulation simplifies the existing livestock tax collection procedures and will reduce the tax burden on herdsmen by large margins. Under the new regulations, the livestock tax will be cut to less than half the previous amount. [Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 17 Jun 80 OW]

CSO: 4007

ATOMIC ENERGY USED TO CONTROL VEGETABLE MOTHS

Beijing RENMIN RIBAO in Chinese 16 Apr 80 p 4

[Article by Li Dan [2621 0030], Hangzhou University: "Use of Atomic Energy to Control Vegetable Moths"]

[Text] The Zhejiang Provincial Agricultural Academy has recently succeeded in its research using radiation sterilization techniques to control vegetable moths. This marks the first time for research inside China on radiation sterilization of vegetable moths, and there have been no reports of its use internationally either. This technique employs release of large numbers of vegetable moths that have been subjected to nuclear irradiation as a result of which they have lost their procreative power and are thus unable to fertilize eggs of vegetable moths of the same specie in the wild. This is a means of controlling and eradicating this harmful insect.

Radiation sterilization technique to control vegetable moths causes vegetable moths from the wild to have a six-fold chance of mating with a moth that has lost its procreative abilities. Eggs of the present generation stand a greater than 50 percent chance of not being fertilized, and more than 30 percent will likely die prematurely following fertilization. Those capable of becoming young insects are fewer than 20 percent. Furthermore, since nuclear irradiation functions to make insects genetically sterile, these vestigial vegetable moths run a 98 percent risk that their eggs will not be fertilized. By continuously releasing irradiated vegetable moths hatched by man, it may be possible to eradicate this insect pest entirely.

9432

CSO: 4007

MEASURES TAKEN TO OVERCOME PORK GLUT GIVEN

Temporary Price Reduction

Hangzhou ZHEJIANG RIBAO in Chinese 21 May 80 p 1

[Text] Based upon the announcement of the Ministry of Commerce and the approval of the Provincial People's Government the Provincial Bureau of Commerce has resolved to sell a batch of pork at a reduced price. From the 21st to the 25th of this month, the city and rural people of the entire province, including the military within the territory of the province is supplied one jin of pork per person at 80 percent of the prevailing price. The Provincial Bureau of Commerce requires that all the areas should have sufficient manpower and extended business hours for the convenience of the masses to buy the pork. At the same time the rule about the price should be followed to satisfy the need of the people for meat.

The temporary price reduction on pork is for the expansion of sale of pork in order to continue to purchase pork to promote the production of pigs. The state's current policy of purchase price on live pigs and the policy of awards remain unchanged.

Expansion of Sales

Hangzhou ZHEJIANG RIBAO in Chinese 21 May 80 p 1

[Text] The Jiashan County Food Company is trying to open up more channels of doing business locally. An expansion of sale of pork in the rural villages to satisfy the need of the masses to eat meat and to promote pig culture and pork production is being carried out. Their experience vividly indicates that there is a great potential in the method of enlarging the sale of pork, using selling to promote purchasing [by the state] which in turn promotes production.

In the past several years, there has been a great development of pig production and a large scale increase of commercial pork. The market of pork supply is opening up. This is a delightful phenomenon, but new conditions and new problems have also emerged. Due to deficiency of cold storage equipment, the quantity for export and sale outside the region is limited. The capability

of processing has not caught up [with production] and the contradiction of purchasing [by the state] being greater than the sale is becoming more troublesome every day. In some areas, the live pigs in storage sheds cannot be sold in a timely manner. This has caused some comrades to believe, mistakenly, that at present there are too many live pigs and fear that they cannot be sold. As a matter of fact, this belief is not in keeping with the reality. We must be able to see the fact that the level of pig production and the level of meat in diet in China at the present time remain very low. When there are more pigs, more pigs should be raised and more pigs should be purchased. Aside from completing the jobs of transferring the pigs, local sales should be expanded to let the farmers eat more meat. Rural inhabitants are the greatest majority. Last year, the pork consumption per person in rural villages of Zhejiang Province was no more than 13 jin. If in the rural villages of the province each person eats 2 to 3 jin more meat per year, more than 1 million pigs above the current level may be sold. This quantity may greatly resolve or lessen the contradiction of purchase being greater than sales. The rural villages are a vast market for selling pork. The potential is extremely great. It is hoped that the local departments of food business can follow the example of Jiashan County Food Company, in adjusting the new change in the situation of supply and demand and turn their emphasis from outside transfer to the expansion of local purchase, local slaughtering, and local sales for the purpose of satisfying the need of farmers for meat and of promoting the industry of pig culture.

Enlarging the sales of pork to resolve the contradiction of purchase being greater than sales is a new subject the commerce departments must face. Surveys and research must be strengthened in the cities or the rural villages, in the region of production or in the region of sales. Multiple channels must be opened according to the demands of the marketplace to enlarge the sale of pork. In the rural villages, efforts should be given to enlarge the consignment stores to sell pork. The local supply and sale associations, production brigades, and production teams may also be asked to make sales. Attention should also be given to meat processing to increase the varieties, to improve the method of supplying, or to sell both raw and cooked varieties, to complete the line of products and enrich the market supply for the convenience of the masses.

6168

CSO: 4007

PROBLEMS WITH BRIGADE SEED TEAMS AIRED

Hangzhou ZHEJIANG RIBAO in Chinese 20 May 80 p 2

[Article by Chen Werxian [7115 1889 2009]: "Brigade Seed Teams Cannot Be Disbanded"]

[Text] Several years ago, 487 seed teams were established in Yuyao County, and that was not an easy task. Last year, close to 300 of these were disbanded. Today, there are only 180 seed teams left. Late April, the author visited Yuyao County. The comrade of the county seed company was worried, saying "If this problem is not given attention, the grain production of the future will necessarily be affected."

Why should the seed teams be disbanded? According to the author's understanding the major reason is the fact that many seed teams are losing money. The seed team of a brigade is a joint operation of the production teams. The labor, land, and money are shared responsibility of the production teams. For a number of years, problems of a policy nature have not been satisfactorily handled; the responsibility system has not been implemented; and the seed teams have been comfortably living off the common pot; therefore, a large number of the seed teams have lost money. "Seed teams that lose money are a burden of the production teams." The contradiction among the seed teams, production teams, and the members has been great. This is the first reason.

Secondly, the leaders have not been paying attention. Some leaders believed one sidedly that seed teams "do not have a very large function and it is difficult to have a responsibility system." "When there are so many owners there are so many ideas; to have the teams is not as good as to have a factory." For this reason, they took care of the production team, the factory, but let the seed team go.

Furthermore, nonsupport of the related departments is also a factor. The department of planning did not budget the capital as a part of the "three materials." The bank did not provide an account. The supply and sale association did not provide the agricultural drugs. Consequently, the seed team became "one of the triplets" outside of the plan. For this reason, the seed team of some brigades having financial difficulties had to be disbanded.

Judging from the experience of some areas, the establishment of a seed team for a brigade is "an important reform in the development from the system of preserving seeds separately by each production team to a system of joint propagation of superior breeds, and an important link in the seed policy of "propagating, selecting, storing, and using by the team and supplementing only when it is necessary." The practice of the past several years demonstrates that there are not a few brigades in Yuyao County that are able to breed good seeds as well as understand the properties of superior breeds and the culture and management technique. They have promoted scientific farming and had a great effect on changing low yield to high yield and to still higher yield. When the Fengnan Commune of that county established its seed team in the winter of 1975, it was a low yield rice producing region. There were many and mixed breeds, more than 30 common and local rice breeds. The crops were so mixed up that in 1977 the unit yield was less than 1,000 jin, lower than the average of the entire county. After 3 years of efforts by the seed team, the No 3 early ripening barley, wheat 908, rice Guanglu dwarf No 4 and Nonghu No 6, all of which had been common local breeds, were all purified and revitalized; and hybrid rice was extended. Unified seed propagation, unified storage, and unified supply of seeds were basically implemented in the entire commune. In 1978, the unit yield of grain increased 39.8 percent over that of the previous year, and 71 jin above that of the entire country. Last year, there was again an increase of 16.7 percent over the year before, 226 jin above the yield of the entire county. In these 2 years, aside from supplying the commune, more than 10,000 jin of seeds was sold each year to help the other communes and brigades.

Although the reason for high yield has many factors, a good seed team is undoubtedly one of the factors. Comrade Hua Guofeng said: "Good seeds may contribute to 20 to 30 percent of the yield increase." Some seed teams are losing operations, but in reality, the operation is very profitable on a little capital, because good seeds produce high yield in the fields. Some say the "loss is in the seed team and the increase is in the production team." This is definitely a reasonable way of putting it. Moreover, if it is done in the right way, the seed team will not necessarily lose money. Last year, the Qunzong Brigade of Fengnan Commune made the joint seed team an enterprise of the brigade to practice specialized production. They system of responsibility with "four quotas and one award" was made effective. There has not only been an increase of yield of seeds but also a surplus of 380 yuan.

Judging from the above facts, the achievement of brigade seed teams must be regarded as affirmative, and the establishment of seed teams the correct direction. The investment is minor and the result is great and fast. The seed team produces good breeds, high yield, and talents. It is one operation of many benefits and is especially necessary at present when many communes have no condition to establish seed farms. If the brigade seed teams are allowed to be disbanded, the condition of "asking the government for seeds when there is a deficiency, the good seeds are given to others, and there is no guarantee of a high yield" will return to form a very passive situation. In the long run, a well operated seed team is a measure for obtaining sustained high yield and promoting fast agricultural modernization and is capable of being carried out. Seed teams, therefore, cannot be disbanded. They should be made stronger.

BRIEFS

WARNING AGAINST HARVESTING EARLY--Many letters to the editor have stated that since the spring grain area was expanded and since the rape and grain are ripening later this year, many areas are harvesting the crops green. This will cause a fall in output. One writer says that in his area wheat and barley were cut in the first half of May when the crops were only 40 percent ripe. Pingyang and Ruian counties harvested their spring grain when 10 percent of the crop was still green. According to past experience, if rape is cut green, there will be a 20-30 jin reduction in the per mu yield of rapeseed; furthermore, the rate of oil extracted will be lower. If barley and wheat are harvested before the waxy ripe stage, then a corresponding decrease in yields will result. [Hangzhou ZHEJIANG RIBAO in Chinese 17 May 80 p 1]

RICE DISEASE--Rice sheath and culm blight is one of the most serious early rice diseases in Zhejiang. According to Jinhua County statistics, the area affected by rice sheath and culm blight in the past few years accounted for approximately 60 percent of the county's early rice area. Each year lost grain production from the disease amounts to 10-15 million jin. [Hangzhou ZHEJIANG RIBAO in Chinese 25 May 80 p 2]

LATE RICE--Because of low temperatures and much rain since the beginning of spring, early rice will ripen late, consequently delaying the transplanting of late rice. This will increase the seedling age of the late rice to be transplanted, cause aging in seedlings and cause overage-early heading to occur. Therefore, now is the time to take appropriate measures such as two-stage transplanting for fields planted with Erjiuqing early rice and expanding where appropriate the area planted with geng varieties which are more tolerant of low temperatures during heading and flowering. [Hangzhou ZHEJIANG RIBAO in Chinese 25 May 80 p 1] At present all five counties in Shaoxing Prefecture have implemented two-stage transplanting for 1.1 million mu of late rice fields. This accounts for 50 percent of the total area for late rice and is more than double the area last year. [Hangzhou ZHEJIANG RIBAO in Chinese 26 May 80 p 1]

HYBRID RICE--The area planted to hybrid rice in Zhejiang Province has reached more than 9.88 million mu. For the past 3 years hybrid rice has increased grain output by 1.2 billion jin. Guangluai No 4 is a high-yielding early rice hybrid which Zhejiang has already cultivated on more than 7.3 million mu. This accounts for more than 40 percent of the early rice area. [Hangzhou ZHEJIANG RIBAO in Chinese 19 May 80 p 1]

DWARFED TEA PLANTS--A new technique of close planting of dwarfed tea shrubs is being extended over more than 30 counties in the tea growing region of Zhejiang Province. This new technique is the result of 7 years of research by the Tea Department of the Zhejiang Provincial Agricultural Academy working in conjunction with other units concerned. In the past, newly developed conventional tea plantations in Zhejiang Province mostly planted individual tea plants at a density of about 4,000 plants in more than 1,300 clumps. It required from 4 to 5 years till tea could be picked, and only after 10 years would a period of high output be attained. The dwarfed close planting method, however, entails planting of many stalks in a three to five fold increase in both the number of plants and the basic number of clumps of tea shrubs planted as compared with conventionally planted tea plantations. Height of the tea plants is controlled at about two-thirds the height of conventional tea plants to make full use of sunlight, air and the soil. This method benefits rapid growth of the tea plants to present a large area for picking, and the period of high output occurs within 4 to 5 years. [Text] [Beijing REN-MIN RIBAO in Chinese 29 Apr 80 p 2] 9432

SUGARCANE PRODUCTION--Over 30 water conservancy projects were completed in Rui'an County last winter and this spring for the irrigation of sugarcane fields. Its total acreage of sugarcane fields is more than 16,000 mu. [Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 23 Jun 80]

SILKWORM COCOON PRODUCTION--Hangzhou, 23 Jun--Zhejiang Province in 1980 produced some 620,000 dan of silkworm cocoons, about 10 percent more than 1979 production. [Beijing XINHUA Domestic Service in Chinese 1320 GMT 23 Jun 80]

TEA PRODUCTION--Fuyang County, Zhejiang, adopts a new method of close planting in increasing tea output, scoring tremendous achievements. Facts have proven that the per-mu yield of tea trees planted with the new method is 464 jin in average, while that of tea trees planted with the conventional method is only 70 jin in average. As of now, 4,000 mu of tea trees have been planted with the new method. [Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 25 Jun 80]

RICE DISEASE--Some 231,000 mu of early rice in Wuxing County are plagued by a sheath and culm blight disease. The disease in 154,000 mu of them was brought under control as of 20 June. [Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 29 Jun 80]

PUBLICATIONS

II. PUBLICATIONS

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A Comparative Study of the Cytogenetic Effects of Benzene, Toluene and Xylene.....Zhong Baozhen [6945 1405 3791], Tang Qini [0781 3825 1200] and Liu Yunli [0491 0061 0448], all of the Toxicology Laboratory, Shanghai Institute of Industrial Hygiene and Occupational Disease (29)

Analysis of Erythrocyte Membrane Proteins on SDS-polyacrylamide Gel Electrophoresis.....Wang Zhuang [3769 1104], Li Xiaobing [2621 1420 0365] and Wang Susheng [3769 5685 3932], all of the Institute of Genetics, Chinese Academy of Sciences, Beijing (32)

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An Exploration of Wild Species of Cultivated Plants on the River-heads of Yangtze and Yellow River in Qinghai ProvinceLi Fan [2621 3879], Institute of Genetics, Chinese Academy of Sciences; Guo Benzao [6753 2609 0340] and Wang Weiye [3769 3634 5030], both of Qinghai Institute of Highland Biology (35)

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The Basis of Quantitative Genetics in Crops. VI. Combining Ability: Incomplete Diallel Cross.....Huang Yuanzhang [7806 6678 2874] and Liu Laifu [0491 0171 4395], both of the Quantitative Genetics Research Section, Department of Biology and Mathematics, Beijing Normal University (43)

* Note: The article is being translated.

9717

C50: 4007

AUTHOR: None

ORG: The Group of Natural Background Values of Soil, Chinese Academy of Sciences

TITLE: "The Natural Background Values of Some Trace Elements in the Important Soil Types of Beijing and Nanjing Areas"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79 pp 319-328

EXCERPT FROM ENGLISH ABSTRACT: The contents of Cu, Be, Zn, Cd, Hg, Sc, La, Pb, As, Se, Cr, Mo, Mn, Co and Ni in the important soil types of Beijing and Nanjing areas were measured by physical and chemical methods. Data concerning the mean value and the standard deviation of these elements, both in various soil types and in the different horizons of each soil profile, are given in the tables of the Chinese text. Results of the present investigation may be summarized as follows.

Variations of the content of trace elements of a soil were largely dependent on their parent materials. Soils derived from different parent materials, even

[Continuation of TURANG XUEBAO No 4, Nov 79 pp 319-328]

belonging to a same soil type, usually show a rather great divergency in background values of trace elements while similarities of the values of trace elements were still perceived in different soil types derived from the same parent material. The present investigation also revealed that soils derived from basic rocks, as a rule, possessed higher background values of trace elements than those from the acidic rocks as shown in the following descending order: basalt, limestone > shale > granite, sandstone.

Author: CHAO Qun [1942 2004]
WU N Shumei [1900 1990 2004]
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Org: All of the Institute of Forestry and Pedology, Chinese Academy of Sciences

Title: "Studies on Moisture Regime in Black Soils in the Northern Part of Northeast China. II. Moisture Regime and Water Cycles in Cultivated Black Soils"

Source: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79 pp 329-338

TEXT OF ENGLISH ABSTRACT: The water regime in cultivated black soils is not only influenced by climatic factors, but also by the crops. In the black soils under different crops, there were obvious differences in the levels of soil humidity and the residual water in soils after the harvest of crops. In wheat fields a high evapotranspiration intensity with a peak which happened earlier and a maximum annual rate of evapotranspiration were found. But in fields of intertilled crops, such as soybeans and corn, the evapotranspiration intensity was lower, the evapotranspiration peak came later, and the annual rate of evapotranspiration was smaller. In the same year, soil humidity in wheat fields

[Continuation of TURANG XUEBAO No 4, Nov 79 pp 329-338]

was lower than that in soybean and corn fields, and the residual soil water in wheat fields after harvest was the smallest.

* This is a revised version of a paper written in October 1970.

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Pedology

TITLE: "Investigation on the Humus in the Main Soil Groups of Tai Bai
Mountain"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79
pp 339-351

TEXT OF ENGLISH ABSTRACT: The Tai Bai mountain, with a summit of more than 4000 m above sea level, is located in the central part of Shanxi Province of northwestern China. The annual rainfall of this region averages about 850 mm. A cool and humid climatic condition prevails at the higher altitudes of this mountainous area. Vertical zonality of the soil distribution from the mountain foot to the summit ranges as follows: Drab soil--Brown soil--Podzolic soil--Soddy podzolic soil--Alpine meadow soil. Investigations on the fractional composition and characteristics of the humus of different soil groups reveal the following results.

The surface layer of all soil possesses a HA/FA ratio around 1.0. But this

[Continuation of TURANG XUEBAO No 4, Nov 79 pp 339-351]

ratio drops markedly with the depth of the profile. With the exception of drab soil, which occurs at the lowest altitude of the mountain, large portions of active humic acid have been found in the HA fraction ranging from 30-95 percent. Coagulation, optical density and electrophoretic tests give evidence that the humic acid in all soils of this area is in rather active forms with a lower aromaticity. In addition, large portions of organic matter in these soils are directly soluble in 0.05N H₂SO₄ and the acid soluble portion usually increases in deeper subsoils. In the subsoil of podzolic soil, the amount of the 0.05N H₂SO₄ soluble fraction occupies about 25 percent of the total soil humus. Present investigations reveal that a cool and humid climatic condition of the mountainous area retards the condensation of the humic substances.

* ZHU Xianmo [2612 7359 6206] provided counsel and soil samples. ZHOU LI [0719 0500] analyzed the infrared spectrum.

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KUANG Anqi [6782 1344 3825]
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YANG Yongqing [2799 3057 3237]

ORG: All of the Soil and Fertilizer Research Institute, Shanghai Academy of Agricultural Science

TITLE: "Preliminary Study of the Availability of Boron and Zinc in Soils of Shanghai"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79 pp 352-361

EXCERPT FROM ENGLISH ABSTRACT: Shanghai is situated in the Yangtze Delta. The main soil types in this district are grayish-blue lowland rice soil (swamp type), grayish-brown upland rice soil (meadow type), brownish-yellow upland rice soil (meadow type) and salty soil.

A preliminary study was made on the contents of available boron and zinc as well as their factors affecting the soils mentioned above. The samples were collected from 44 localities.

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TITLE: "Studies on Electrochemical Properties of Soils. VII. Potentiometric Determination of the Mean Activity of NaCl in Soils In Situ"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79 pp 362-371

EXCERPT FROM ENGLISH ABSTRACT: A potentiometric method for the determination of the apparent mean activity of NaCl in saline soils in situ was proposed. A spear-type sodium-selective glass electrode and a spear-type chloride-selective pressed electrode were used. It was found that under ordinary circumstances the equilibrium potential between the electrodes and the soil generally was reached within 10 min. after the insertion of the electrode into the soil, the actual time being dependent on the water content and NaCl content of the soil. For most saline soils with a water content near field capacity, the equilibrium time was 2-5 minutes.

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TITLE: "Studies on the Phosphorus Status of the Soils in Shanghai"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Sep 79 pp 372-379

TEXT OF ENGLISH ABSTRACT: The present paper deals mainly with the phosphorus status of the soils in the suburbs of Shanghai. Two different methods were employed to extract the different forms of phosphorus in the soils. The results obtained showed that inorganic phosphorus comprised about 90 percent of the total phosphorus, and of the inorganic phosphorus calcium phosphate accounted for more than 50 percent. Seventy to eighty percent of calcium phosphate took the forms of rock phosphate.

Moreover, determination of the transformation of phosphorus in paddy soil by ^{32}P labeling method revealed that, after the application of phosphorus fertilizer to the soils, at first the majority of phosphorus existed in the form of Al-P, then gradually converted to Fe-P, and finally most of it was transformed

[Continuation of TURANG XUEBAO No 4, Sep 79 pp 372-379]

into Ca-P.

Through comparative study of extraction of available phosphorus in the soils and through field trials, it is proven that Olsen's method is suitable for the soils in Shanghai.

This article puts forward some suggestions on the application of phosphorus fertilizers to the soil in the suburbs of Shanghai.

* WANG Yinhu [3076 1377 5706] and GU Zhonglan [7357 0112 5695] took part in the work.

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ORG: WEN and WANG Baozhong both of the Institute of Utilization of Atomic Energy, Chinese Academy of Agricultural Science; WANG Fujun and PENG both of Beijing University of Agriculture; MAI of Lutai Farm, Hebei Province

TITLE: "Study of the Effect of Nitrofication Inhibitors on the Rice Yield Applied with Isotope ^{15}N "

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79 pp 380-386

TEXT OF ENGLISH ABSTRACT: The effect of certain nitrofication inhibitors, such as 2-chloro-6(trichloromethyl) pyridine and 1-amino-2-thiourea, on the absorption rate of urea, ammonium carbonate ammonium sulphate and ammonium nitrate by the rice variety Bai-Jin was studied.

The rice plant tested was grown in the field plots on a saline light color meadow soil or in bottomless pots filled with the same soil. It was found that

[Continuation of TURANG XUEBAO No 4, Nov 79 pp 380-386]

the utilization rate of the fertilizer nitrogen by the rice plants and the yield of rice grains were increased to different extents due to the application of nitrofication inhibitors.

* LIU Xinsheng [0491 1800 3932] and ZHANG Qingmao [1728 1987 5399] took part in the research.

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TITLE: "Study on the Clay Minerals of Cinnamon Soil in Xiangshan District of Beijing"*

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79 pp 387-396

TEXT OF ENGLISH ABSTRACT: The clay minerals in two soil profiles of cinnamon soil in Xiangshan district of Beijing were studied by chemical analysis, cation exchange capacity determination, differential thermal analysis and X-ray diffraction. The results obtained are as follows:

1. The minerals in the clay fraction are composed of illite, strongly hydrated illite, illite-montmorillonite interstratified mineral, hydrobiotite and vermiculite.

2. The transformation sequences of clay minerals in cinnamon soil are supposed as follows:

I. (muscovite, feldspar, sericite)→illite→strongly hydrated illite→interstratified clay mineral ($d_1/d_2 = 10/10 \text{ \AA}$, p value is inequality)→montmorillonite (?).

II. (biotite)→hydrobiotite→vermiculite.

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3. The principal characteristics of mineral transformation in the genetic process of cinnamon soil are clayization and weak ferrugination. The clayization is characterized by the presence of interstratified clay mineral and the sequence of clay mineral transformation mentioned above.

*Professor LI Lianjie [2621 6647 2212] provided counsel. SHI Yuanchun [4258 0337 2504] and XIN Dehui [6580 1795 1920] provided assistance.

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TITLE: "Computation of Soil Color by Reflecto-Spectrometer Analysis"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79
pp 397-408

TEXT OF ENGLISH ABSTRACT: Composition of soil color is determined by scanning with a reflecto-spectrometer in the visible range. The computation of XYZ color system is based on the data obtained as percentage of reflection at different wavelengths. The x, y values given in the color coordinates of the XYZ system are again converted into standard colors according to Munsell's system.

In order to eliminate the tedious procedures of calculation, the present authors have suggested two tables of "1-9 times XZ coefficient" and "x,y color coordination." By consulting these two tables it is feasible to denominate the soil colors directly from their spectrometric readings both in the laboratory and in the field. Examples for the method of the denomination of soil color are illustrated in the present report.

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TITLE: "Studies on Methods for Determination of Available Phosphorus in Acid Paddy Soils"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79
pp 409-413

TEXT OF ENGLISH ABSTRACT: Paddy soils developed from red earth [pH 5.2-5.9, organic matter 1-3.1% and total phosphorus (P) 0.022-0.044%] were used in the present experiment.

Field experiments applying phosphatic fertilizer were carried out in Jinhua and Quxian areas of Zhejiang Province. The amounts of phosphorus available in the soil were determined by four conventional extractants, i.e., 0.5 M NaHCO₃ (Olsen), 0.025 N HCl + 0.03 N NH₄F (Bray), 0.05 N HCl + 0.025 N H₂SO₄ (Nelson) and 0.3 N NaOH + 0.5 N Na₂C₂O₄ (Al-Abbas). Results obtained were compared with the response of rice crops to the phosphatic fertilizers.

Conclusions from the obtained data are as follows: 1. Soil-available phosphorus extracted by 0.5 M NaHCO_3 showed best correlation with the response of rice to phosphorus fertilizer ($r = -0.824$), while results from the other three methods were insignificant. 2. The critical value of available phosphorus for this experiment is about 7 ppm (P). 3. Results of available phosphorus obtained from soil samples at field moisture condition were compared with those of soil samples at air-dried condition. Using air-dried soil samples for determination of available phosphorus is suggested.

* The Agricultural Science Station, Shilifeng Farm, Quxian County, conducted the field experiments.

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TITLE: "Study on the Potassium Bearing Minerals in Soil. (1) The Forms and Release of Potassium"*

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 4, Nov 79 pp 414-421

TEXT OF ENGLISH ABSTRACT: An investigation on biotite, muscovite, illite and orthoclase was made by chemical analysis, X-ray diffraction and electron microscopy. The results obtained are summarized as follows:

1. The content of water soluble K was: biotite > muscovite > orthoclase > illite; that of exchangeable K was: muscovite > biotite > orthoclase > illite; and that of slowly available K was: biotite > muscovite > illite > orthoclase.
2. The slowly available K was determined by boiling 1 N HNO_3 . The largest amount was released in the initial two treatments, and a constant rate of potassium release was reached at the final stage. The total amount of slowly available K released from the minerals varied with the particle size, and the largest amount was released from the fraction $< 2\mu$.

[Continuation of TUDANG XUEBAO No 4, Nov 79 pp 414-421]

3. The effect of pH on the amount of soluble potassium for biotite and muscovite was remarkable with the maximum pH ≤ 2 . The effect of pH on orthoclase and illite was insignificant.

4. In seedling experiment, the amount of potassium taken up by wheat from these minerals was: biotite > muscovite > orthoclase > illite.

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TITLE: "Effect of Cropping System on the Fertility of Paddy Soils"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 80
pp 101-119

EXCERPT FROM ENGLISH ABSTRACT: Soil fertility is the quality that enables the soil to provide and regulate the nutrients and environmental conditions favorable for the plant growth, and it includes all the physical, chemical and biological properties of soils which are closely related to the growth of crops. The fertility level may be taken as a criterion for the productivity of soils; and the combination of reasonable utilization with proper management of soil may be the only way to maintain and promote the high level of soil fertility.

There are two ways to increase production of grains without increasing cultivated

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area. One is the reinforcement of land productivity through technological innovation, and the other is the further intensification of land use through double or multiple cropping. However, a cropping system must be suitable for its special natural environment and definite condition of social economy. The cropping system must be varied in different soils. A favorable cropping system is also a good measure for the enhancement of soil fertility.

In the southeastern part of China, rice is usually planted in the lowland and plain where the winter wheat in double cropping systems does not grow very well due to the poor drainage. In this case, a triple cropping system (wheat-rice-rice or green manure-rice-rice) changed from the double cropping system (wheat-rice or green manure-rice) will prolong even more the period of submergence, and therefore a hanging water gley layer (pseudogley layer) is formed in the plowed sole layer. Furthermore, plowing and harrowing in the submerged condition will induce the soil to be more compact and harder after dryness and the fertility will be depressed gradually. The cropping system in relation to the morphological, physical and chemical properties of the soil are discussed in this article.

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TITLE: "The Genesis and Classification of the Paddy Soils, Tai-Lake Basin, Jiangsu Province, China"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 80 pp 120-132

TEXT OF ENGLISH ABSTRACT: Tai-Lake Basin is located at the lower Yangtze delta in a northern monsoon climate. It covers an area of about 30,000 square kilometers. Paddy fields occupy about 90 percent of the total cultivated area.

Historically, most of the land is used for rice-wheat rotation annually. At present, when conditions are favorable, large areas have been adapted for three crops a year, i.e., rice-rice-upland crops (barley, rape or wheat). It is one of the highly productive areas in this country with annual yield averaging 9-10.5 tons of grain per hectare.

Since paddy soils are developed under a long time of submersion with periodic wet

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and dry cultivation, the main pedogenic process of paddy soil is the alternate action of reduction and oxidation accompanied by the formation of ferro-humic coating and streaks and formation of Paitu. In consequence, the morphological feature of paddy soils as well as their physical, chemical and biological properties, diverge from the original upland soils. The presence of a plowed layer, plowpan, perco-submergic layer or illuvial gley spotted layer usually characterizes the specific features of a paddy soil profile.

Gleization process prevails in all submerged soils. However, owing to the periodic wet and dry states during rice cultivation, reduction potential appears only in the surface layer of paddy soil at a waterlogged condition. Once the flooding water has been drained off, the surface soil begins to segment into plowed horizon and subplow horizon. Only in the case of poorly drained paddy fields, gley colored clods and granules appear in the subplow horizon. Deeper subsoils below the plowpan layer generally possess an oxidation potential, and gleid speckles occasionally coat the surface of soil cleavages. The formation of spotted gleid clayey horizon seldom occurs in the paddy soil of Tai-Lake area.

The formation of the reddish speckles and streaks which coat the soil clods and cleavages is usually through the following processes. A ferro-humic complex is first formed under the submerged condition at a reduction potential. But the

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reddish coloration appears only at the dry state when the ferrous substances are partially oxidized into ferric states. Paddy soils bearing such a pedogenic process characterize high fertility and productivity. Conditions necessary to provide the formation of ferro-humic complex involve the following three factors: first, a decalcified deposit of neutral to slightly acid reaction; secondly, a well drained condition with water table below 50 cm during the dry period; and third, a high content of humus in the surface soil with the active portion of the humic matter being constantly renewed.

Paitu or soils with a bleached sub-horizon are formed by another pedogenic process under rice cultivation. These soils are usually developed on red earth, high leached loess (the Xiasu loam) or decalcified alluvial and lacustrine deposits. The development of bleached soil undergoes three stages. First, the iron-manganese coatings occurring on the original soil profile are destroyed under the reduction potential of a submerged state, followed by the dispersion of soil particles and then facilitating the downward migration of clay. Secondly, illuviation of clay particles and ferro-manganous materials converts the reducing horizon into a whitish silty layer, characterizing the typical feature of Paitu, which is underlaid by a layer of clayey deposit rich in Fe-Mn materials. Thirdly, further development of the bleaching process makes the whitish silty horizon weakly acid and the colloidal fraction of this horizon shows a comparatively high $\text{SiO}_2/\text{Al}_2\text{O}_3$ and

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low exchange capacity of clay, in comparison with any other part of the soil profile.

Recently paddy soils have been denominated as anthraquic soil, which is classified into five main soil groups according to the pattern of the soil profile and its water regime. They are: permeable paddy soil, side bleaching paddy soil, stagnating paddy soil, waterlogged paddy soil and percolating paddy soil.

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TITLE: "Studies on Coated Ammonium Bicarbonate Pills as a Slow-Release Fertilizer"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 80
pp 133-144

TEXT OF ENGLISH ABSTRACT: Ammonium bicarbonate is a low grade nitrogen fertilizer. It is easily volatile and of poor physical properties. However, at present a large number of small nitrogen factories are still operating to produce this fertilizer for local usage in China.

Recently, deep drill of NH_4HCO_3 pills below soil surface has been found much more effective for crop growth than top dress of NH_4HCO_3 powder. The pills weigh about 1 gm and are pressed out by a double-roll prilling machine.

The present investigation deals with the coating technique of NH_4HCO_3 pills for

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preparing a slow-release fertilizer and the factors affecting the release rate of N from coated pills. The efficiency of this controlled nitrogen fertilizer has also been studied.

Fused Ca-Mg-phosphate, a commonly used phosphatic fertilizer in China, has been suggested as the main component of the coating materials. The coating procedure is as follows: Rotate the NH_4HCO_3 pills in a rotating pan. Diluted phosphoric acid is sprayed in situ and meantime powdered Ca-Mg-phosphate is added. A molten mixture of wax and asphalt is used as a sealing agent, and finally, at the end of the rotation a small amount of powdered Ca-Mg-phosphate is introduced as a conditioner.

The coated pills weigh 1.1-1.2 gm. They are composed of about 73% NH_4HCO_3 , 3% moisture, 4% calcined dolomite and 20% coating shell. As expressed in terms of plant nutrients, they contain 11-12% N, 3% total P_2O_5 of which more than 80% is in available form, and with certain amounts of available Ca, Mg, and siliceous acid. The components of the coating shell, as identified by X-ray diffraction, are mainly calcium carbonate, $\text{NH}_4\text{-Mg-phosphate}$ ($\text{NH}_4\text{MgPO}_4 \cdot 6\text{H}_2\text{O}$) with ammonium phosphate.

The factors affecting the release rate of N from coated NH_4HCO_3 pills have been studied both in the field and in the laboratory. Regulation of N-release from the coated NH_4HCO_3 pills can be done by varying the quantity of the sealing materials.

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A heavier coating reduces the rate of N-release from the coated pills. Three grades of the rate of N-release have been established, i.e., 69-71%, 30-38%, 14-19% during the first 48 hours at 30°C in water.

Temperature seems to be an important factor affecting the rate of release of a given coated pill. An increase of each 10°C increases the rate of release more than double. The release rate is independent of soil pH. Soil moisture content within the limit of field capacity shows no effect, but under flooded conditions the rate of release drops markedly.

Fertilizer experiments on the response of corn and wheat plants to slow-release NH_4HCO_3 pills were laid on a silt clay loam, pH 8.8, containing 13.3% CaCO_3 , in the loessal plateau of Shaanxi Province, northwestern China. Nitrogen fertilizers, including powdered NH_4HCO_3 , pillared NH_4HCO_3 and slow-release NH_4HCO_3 pills, were applied at a rate of 75 kg N per hectare. Marked increases of the yields of corn and wheat grains were obtained in all plots receiving nitrogen fertilizers ($P < 1\%$) in comparison with plots without nitrogen treatment, but no significant difference ($P > 5\%$) on the yield values could be observed between any forms of the NH_4HCO_3 fertilizers. The mean values of yield in 1977-1978 were as follows: for corn (grains kg per hectare) 1978, no nitrogen 4545; NH_4HCO_3 powder 3-splits top dressing 5070; deep drill of NH_4HCO_3 pills 5415; deep drill of slow-release NH_4HCO_3 5422. For wheat (grains kg per hectare) 1977-1978, no nitrogen 5610; NH_4HCO_3

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powder 2-splits top dressing 6375; deep drill of NH_4HCO_3 pills 6660; deep drill of slow-release NH_4HCO_3 6583.

Field observation revealed two facts worthwhile to note. First, we have found that, after the harvestation of the corn, most of the coated NH_4HCO_3 pills still retained about 1/4 of the NH_4HCO_3 within the coating shell, with consumption of the N-nutrient during the experimental period being around 75%. Similar phenomena occurred on the wheat field. Second, a mat of network formed by the root hairs of the wheat was coated on the surface of the coating shell. We believe that slow-release NH_4HCO_3 pills may have residual value of N-nutrient to succeeding crop. The effect of the root-hair mat surrounding the pill surface of slow-release fertilizer remains for further study.

* The following participated in portions of the study: FAN Qinzhen [5400 2953 2823], XU Jiquan [6079 0370 3123] and CAO Shenggeng [2580 0581 6342].

AUTHOR: LUO Ruying [5012 3067 5391]

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TITLE: "Discriminant Analysis of Inhibiting Soil Conditions of Chinese Fir Stands in Low Mountain Districts of Jiangxi Province"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 80 pp 145-155

TEXT OF ENGLISH ABSTRACT: In recent years some Chinese fir (Cunninghamia lanceolata) stands in southern China have been found "yellowing," i.e., the trees become stunted with yellowish to bronzed needles and root rot, and even dry up. The preliminary investigation revealed that it is not infectious disease, but physiological hindrance caused by inhibiting factors of soil. Owing to the complexity of the inhibiting factors in soil, we have failed to find out any critical value of soil characters by simple comparison of them. Therefore, a discriminant analysis of soil characters was conducted for two sets of surveyed data.

The 18 plots of red soil under Chinese fir stands were initially segregated into normal and inhibited groups to which a linear discriminant function of variables was applied in accordance with Fisher's principle. Five variables taken into account are: A--Colloidal particle percentage of subsoil (expressed as a tenth of

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a percent), B--Bulk density of subsoil (expressed as g/cm³), C--Thickness of soil solum (expressed in meters), D--Depth to gray streaks or ferruginous mottling (expressed in meters), E--Organic matter content of surface soil (expressed as a percentage). Analyses were made to determine which soil characters (variables) were of great influence on the discrimination of these two groups.

Three discriminant functions developed with 5, 4, 3 variables respectively showing that the four-variable equation

$$R = -2.46A - 24.5B + 5.06C + 14.1D$$

is the best one without misgrouping of the 18 plots and reducing the calculation work by withdrawing the unimportant variable E. The weights of the four variables (A 4.6%, B 7.4%, C 13.3%, D 74.7%) indicate that soil drainage (i.e. D, expressed as depth to gray streaks or ferruginous mottling) is the most important factor for inhibiting soil condition. The other variables are less important than D, but still have certain contributions to Chinese fir "yellowing." The difference between the mean soil characters for the normal-inhibited groups was highly significant ($F_{4,13} = 16.4$). This result shows that the four-variable discriminant function is reliable. Through mathematical treatment in this study, linear combinations of soil characters (discriminators) obtained are, e.g., in four-variable function,

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R_0 = -30.3 (critical discriminator),
 R_1 = -16.9 (mean discriminant value of normal state),
 R_{11} = -37.1 (mean discriminant value of inhibiting condition).

Both preceding and the results of our investigations suggest that discriminant analysis is useful for distinguishing the inhibiting condition from the normal state of forest soil and provide a criterion for them.

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TITLE: "Primary Studies on the Evaluation Method of Soil Resources in Guizhou Province"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 80 pp 156-164

TEXT OF ENGLISH ABSTRACT: The present article deals with the study of the evaluation method of soil resources based on the soil map of Guizhou Province on the scale of 1:500,000 and supplementary soil surveys. The main points obtained in this study are summarized as follows:

1. First, the principles of soil resources evaluation should be determined according to the natural and economic characteristics of the district. Reasonable evaluation methods which involve adoption of suitable systems, factors, criteria and procedures of evaluation should be consistent with the principles of evaluation.
2. The selection of factors in the evaluation is of most importance for the high quality and precision of the evaluation. The factors used in this study include: characteristics of soil; characteristics of soil and land, and characteristics of land. It is suggested by the author that the factors should be adopted according to the requirements of the scales of the soil resource map, i.e., the

characteristics of soil may be used for the map of a larger scale, as well as that of soil and land for the map of a middle scale and that of land for the map of a small scale.

3. The evaluation system includes four categories:

Order--indication of proper utilization types based on the natural and economic characteristics;

Class--indication of difference in the quality of soil resources under the same type of utilization;

Grade--indication of the types of factors which limit the soil productivity;

Variety--indication of the intensity of limitations mentioned above.

* Also assisting with the study were: QU Jiaming [1448 1367 6900], HUANG Qinsan [7806 0530 6500], ZHU Yongchang [2612 3057 2490] and JIANG Mingxiang [5592 2494 4382], all of Guizhou Provincial Forestry Survey and Design Academy; ZOU Guochu [6760 0948 4342], LIU Xingwen [0491 5281 2429], YANG Yun [2799 0061] and XU Shengxi [1776 5110 6932].

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TITLE: "Determination of Sulfate in Soil by Thermometric Titration Method"

SOURCE: Beijing TUDANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 80 pp 165-171

TEXT OF ENGLISH ABSTRACT: The applicability of thermometric titration method for the determination of sulfate in soil was studied. A thermistor was used to indicate the temperature change of the test solution. A constant flow device was used to deliver the barium chloride solution as titrant. The titration curves were recorded automatically by a strip-chart recorder.

It was found that the reproducibility of recovery of added sulfate was only about $\pm 10\%$ when the thermometric titration method was directly applied to the determination in soil extracts. However, in 50% alcohol solutions a reproducibility of about $\pm 4\%$ was obtained. The accuracy as compared with the gravimetric method was about $\pm 4\%$. The minimum content of sulfate which can be measured with reasonable accuracy is 1 meq/100 g soil when the proportion of soil to water is 1:5.

[Continuation of TURANG XUEBAO No 2, May 80 pp 165-171]

It is concluded that this method has the advantage of speed with an accuracy comparable to the indirect titration method by EDTA.

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TITLE: "Biological Effect of Turning Over of Straws into Soil"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 80 pp 172-181

ABSTRACT: This paper reports 2 studies in 1964-1966 and 1974-1976 on planosol into which stubble is turned directly. The soil and weather conditions of the experimental farm located in Mishan County of Heilongjiang Province are described. The corn stubble is turned into the plow layer (15-20 cm) in late autumn before the soil freezes, about 750 jin of stubble per mu. In late July, the wheat stubble is turned over immediately after harvest, but the combine harvester is used to cut the straw which is sprayed with a liquid nitrogen fertilizer or farm fertilizer. In the control, the stubble is burned and not turned over. Effects of the stubble on the biological activities, the amount of microorganisms, and the biochemical characteristics of the planosol are reported. The enzymatic activities of the planosol are also studied.

The author wishes to thank Heilongjiang Jinsha State-operated Farm and 853 State-operated Farm for their support in the course of the study.

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TITLE: "Observation of the Fabric of Diagnostic Horizons of Several Soils With the SEM"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2, May 80 pp 182-186

ABSTRACT: In the most recent decade, SEM [scanning electronic microscope] has been extensively applied to study the micro-morphology of soils and ultra-micro characteristics of weathering of minerals. This paper reports the study of several soils, including dark brown forest soil derived on granite, meadow planosol derived on clay alluvial and lacustrine deposits, meadow black soil derived on clay loessal deposits, shallow column solonetz derived on alluvial and lacustrine deposits, leached cinnamon soil derived on red clay, and carbonated cinnamon soil derived on violet shale, of the Northeast Region with a JEM-100B electron microscope to observe the granular structure of the soil body (ped), the surface morphology of the fine materials, the spatial arrangement, and the formation of micro-spaces in the structure. Results indicate that the appearance of the different horizons varies a great deal, but the important phenomenon of the soils is gelatinization and gel liquefaction of the basic substance.

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TITLE: "Study on the Durability of Mole Channel"

SOURCE: Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese No 2,
May 80 pp 187-192

ABSTRACT: Drilling mole channels in clay soil generally brings about a drainage effect. In the past, the authors had believed that as the sand and mud are drained through the mole channel it will become obstructed and ineffective. This paper reports a study on effects of the characteristic of the soil in the vicinity of the mole channel, the quality of drilling, and the size and shape of the mole channel on its durability. Results of the study indicate that although the characteristic of the soil has an important effect, it is not easy to change the characteristic of the soil of the lower horizons for the purpose of lengthening the useful life of the channel. If drill bits of different shapes and sizes are used to drill the channel, its durability is also found to be different, however. A drill bit structural designing approach to lengthening the useful life of the mole channel is proposed by the authors. The authors wish to thank Chengxiu Farm of Anhui Province, Changshu County Institute of Farming Implements, Jiangsu Province, and Changshu County Field Water Conservancy Experimental Station for their valuable assistance.

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